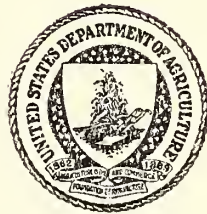


WASHINGTON
JEFFERSON
LINCOLN
AND AGRICULTURE



Bureau of Agricultural Economics
United States Department of Agriculture
November 1937

In this publication I
sought to present
selections which delineate
the eminent contributions
of three great Americans
to the agriculture of
their country

WASHINGTON

Frederic E. Edwards

Sept 12, 1944


JEFFERSON

LINCOLN

AND AGRICULTURE



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FOREWORD

The year 1937 marks the seventy-fifth anniversary of the founding of the United States Department of Agriculture and the passage of the Land Grant College Act, both approved by President Lincoln in 1862. It thus becomes the occasion for retrospective and prospective views of American agriculture.

A collection of the observations on agriculture by Washington, Jefferson, and Lincoln, three leaders eminent in American history, is, therefore, of especial interest at this time. The selections here included present the views of these leaders on the place of agriculture in the life of the Nation, their farming experiences, and the contemporaneous agricultural conditions.

Everett E. Edwards is responsible for the selections and the introductory notes. A committee consisting of Roy F. Hendrickson, Mary G. Lacy, Caroline B. Sherman, and O. C. Stine assisted in the publication.

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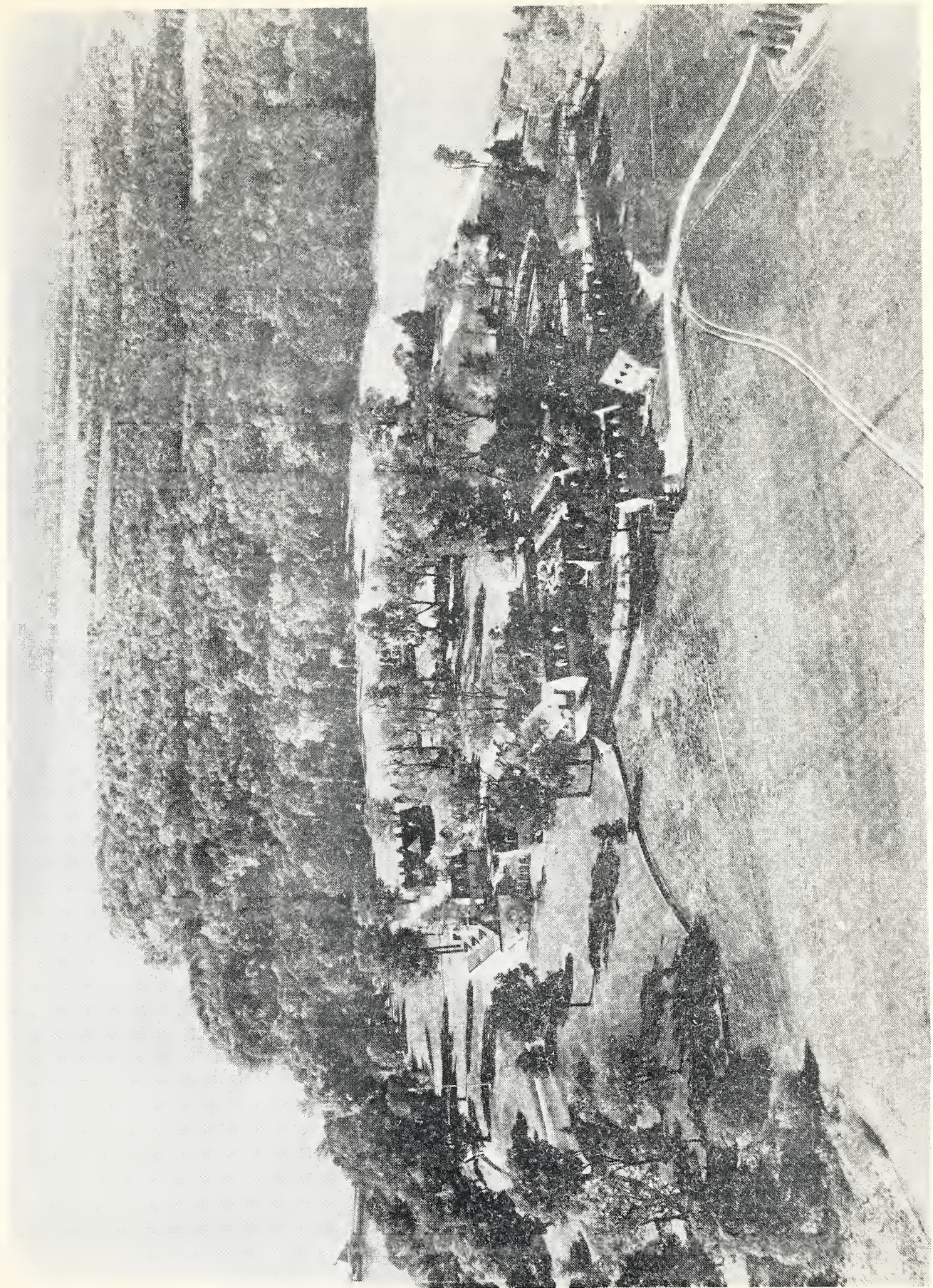
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Washington and Agriculture

AERIAL VIEW OF MOUNT VERNON



INTRODUCTORY NOTE

Washington's main aspiration was to be a successful farmer. Having settled at Mount Vernon in 1759, each time he was called to his country's service he left his farming with greater reluctance. During the long and trying years of the American Revolution and later during his presidency he constantly looked forward to the day when he could lay down his public duties and return to his farm home on the banks of the Potomac. Expressions of this general view are found throughout his personal correspondence and are attested by the incidents and observations recorded in his diaries.

In his attitude toward agriculture, Washington exemplified the spirit of scientific research. His farming was remarkable in that he did many things advocated by agriculturists of today. He worked to conserve his soil and check its erosion, diversified his crops, and pioneered in using new machinery, so that Mount Vernon became a veritable experimental farm. In attempting scientific farming his task was not easy. Today any farmer in America can get technical information and suggestions by writing the United States Department of Agriculture, the agricultural college or experiment station of his State, the local county agent, or one of the many farm journals. But Washington had no such aids. Only a few at that time were interested in improved methods, and he had to seek facts by experimenting and by corresponding with members of a small group in England, led by Arthur Young and John Sinclair, who were making careful studies and publishing their findings. Extensive notes among Washington's papers indicate how carefully he read the writings of these men.

Washington's interest in agriculture was not limited to Mount Vernon. His wide travels throughout the colonies and his acquaintance with the leading agriculturists of Europe as well as America gave him a comprehensive understanding of the importance and needs of agriculture in the Nation he did so much toward creating. Washington also had a vision of an empire of farms west of the Alleghenies, and he led in the efforts to improve transportation facilities between the headwaters of the Potomac River and those of the Ohio in order that the farmers who settled in the West could have a market for their crops.

Washington gradually added to his inherited holdings, and at one time or another he owned some 69,615 acres of land in thirty-seven localities, together with twenty-four city lots and one whole city square. But the Mount Vernon estate, comprising approximately 8,077 acres and divided into five farms and woodlands, received his major attention. In connection with this estate, he operated a fishery, a ferry, and two grist mills.

Conserving the soil and checking its erosion were of first importance in Washington's mind throughout the years following the Revolution. When looking for a new manager he demanded that the man must be, "above all, Midas like, one who can convert everything he touches into manure, as the first transmutation toward gold; in a word, one who can bring wornout and gullied lands into good tilth in the shortest time." He experimented with various fertilizers and used marl and muck from the Potomac River bottom on some of his fields. Mechanical difficulties prevented him from spreading river mud as fertilizer on a large scale. Noah Webster said that at the time of his visit to Mount Vernon the standing toast was "Success to the mud!"

In the early 1760's, Washington, like all other planters in Tidewater Virginia, specialized in tobacco. In 1759 he made 34,160 pounds of it, and in 1763, 89,079 pounds; by 1773, however, the quantity had dropped to 5,000 pounds, and during the course of the next fifteen years he practically discontinued raising it. He realized that continuous single cropping would destroy the fertility of the soil and turned to other crops. By careful seed selection, he developed a very good strain of wheat. In commenting on the flour made in his mills for shipment to plantations in the West Indies, he stated that his was as good in quality as any produced in America. He experimented with new crops and procured seed from other colonies and England. As early as 1760, he sowed lucerne, known today as alfalfa. He was interested in clovers and grasses, not only as a means of conserving the soil, but also to provide feed for his livestock.

Of special concern to Washington was the improvement of the grain drills used in his time. Soon after he settled at Mount Vernon he "Fitted a two Eyed Plow instead of a Duck Bill Plow," but the results were not satisfactory, and a little later, he "Spent the greater part of the day in making a new plow of my own Invention." He recorded that "She answered very well." Later he imported an improved Rotherham or patent plow from England.

Washington's observations in the northern colonies while leading the army during the Revolution turned his attention to the desirability of keeping more and better livestock. He was, according to his own account, the first American to raise mules. Soon after the War for Independence he asked the American representative in Spain "to procure permission to extract a Jack ass of the best breed," but exportation of these animals was at that time prohibited. But in 1785, the King of Spain sent him two jacks and two jennets. One jack died on the way, but the other arrived safely and was appropriately named "Royal Gift." This animal was later taken on a tour of the Southern States. In 1786 General Lafayette sent Washington a jack and two jennets of the Malta breed.

Washington greatly improved his sheep, increasing the wool production to $5\frac{1}{4}$ pounds as the average fleece, whereas his neighbors seldom clipped 2 pounds. His records show that he had about six hundred sheep in 1793. In his efforts to improve his flock, he found the restrictions on the exportation of breeding animals from the Mother Country a decided drawback.

Washington believed that records were essential to successful farming. During his years at Mount Vernon he kept a diary in which he recorded the happenings of the day, his agricultural and other experiments, a record of the people who came to visit him, and a detailed account of the weather. With this last information he hoped to draw conclusions as to the best time for planting various crops. He also kept a cash memorandum book, charge account books, mill books, and a special book for the accounts of the estate of his stepchildren. When away from home he required his manager to send him detailed weekly reports. These contained daily weather data and notes regarding the work done on each farm, what each person was doing, the losses and increases in livestock, and similar matters. In return he wrote weekly letters containing inquiries, directions, and corrections. Washington stands in the forefront of the leaders to whose vision, determination, and judgment America owes its rapid progress in agriculture. - Everett E. Edwards.

EXCERPTS FROM WASHINGTON'S FARM DIARIES

One of Washington's early experiments with various fertilizers is described in the following entry from his Diary for April 1760.

Monday, 14. Fine warm day, Wind So'ly and clear till the Even'g when it clouded; No Fish were to be catchd to day neither.

Mixd my Composts in a box with ten Apartments in the following manner, viz: in No. 1 is three pecks of the Earth brought from below the Hill out of the 46 Acre Field without any mixture; in No. 2 is two pecks of the said Earth and one of Marle taken out of the said Field, which Marle seemed a little Inclina-ble to Sand;

3. Has 2 Pecks of sd. Earth and 1 of Riverside Sand;
4. Has a Peck of Horse Dung;
5. Has mud taken out of the Creek;
6. Has Cow Dung;
7. Marle from the Gullys on the Hill side, wch. seemd to be purer than the other;
8. Sheep Dung;
9. Black Mould taken out of the Pocason on the Creek side;
10. Clay got just below the Garden.

All mixd with the same quantity and sort of Earth in the most effectual manner by reducing the whole to a tolerable degree of fineness and ju[m]bling them well together in a Cloth.

In each of these divisions were planted three grains of Wheat, 3 of Oats and as many of Barley -- all at equal distances in Rows, and of equal depth (done by a machine made for the purpose).

The Wheat Rows are next the Numberd side, the Oats in the Middle and the Barley on that side next the upper part of the Garden.

Two or three hours after sowing in this manner, and about an hour before Sunset I waterd them all equally alike with water that had been standing in a Tub abt. two hours exposed to the Sun. . . .

Finishd Harrowing the Clover Field, and began reharrowing of it. Got a new harrow made of smaller, and closer Tinings for Harrowing in Grain -- the other being more proper for preparing the Ground for sowing.

Cook Jack's plow was stopd he being employd in setting the Lime Kiln. -- J. C. Fitzpatrick, ed., The Diaries of George Washington, 1748-1799, 1:153-154 (Boston and New York, Houghton Mifflin Co., 1925).

The minuteness of Washington's observations on his grain crops is indicated by the following entry in his Diary for May 1760.

Thursday, 1st. Got over early in the Morning and reachd home before Dinner time, and upon inquiry found that my Clover Field was finishd sowing and Rolling the Saturday I left home -- as was sowing of my Lucerne: and that on the [] they began sowing the last field of Oats and finishd it the 25th.

That in box No. 6, two grains of wheat appeard on the 20th, one an Inch high; on the 22d a grain of Wheat in No 7 and 9 appeard; on the 23 after a good deal of Rain the Night before some Stalks appeard in Nos. 2. 3. 4. 5. and 6, but the Ground was so hard bakd by the drying winds when I came home that it was difficult to say which Nos. lookd most thriving. However in

| | |
|---------|----------------------------|
| No. 1 | there was nothing come up; |
| 2..... | 2 Oats..... 1 barley; |
| 3..... | 1 Oat..... 2 barley; |
| 4..... | 1 Oat; |
| 5..... | 1 Wheat 2 Oats; |
| 6..... | 1 Do. 3 Do..... 1 Do. |
| 7..... | 1 Do. 2 Do..... 2 Do. |
| 8..... | 1 Do. 1 Do. |
| 9..... | 2 Do. 3 Do..... 2 Do. |
| 10..... | 1 Do. |

The two Grains in No. 8 were I think rather the strongest, but upon the whole No. 9 was the best. -- J. C. Fitzpatrick, ed., The Diaries of George Washington, 1748-1799, 1:158 (Boston and New York, Houghton Mifflin Co., 1925).

Washington's careful attention to his orchard is recorded in the following entry in his Diary for March 1765.

5th. Grafted 15 English Mulberrys on wild Mulberry Stocks on the side of the Hill near the Spring Path. Note, the Stocks were very Milkey.
6th. Grafted 10 Carnation Cherrys on growing Stocks in the Garden -- viz. 5 of them in and about the Mint Bed, 3 under the Marella Cherry

tree, 1 on a Stock in the middle of the border of the last square, and just above the 2d. fall (Note, this Graft is on the Northernmost fork) of Do.; on the Westernmost one is a Bullock Heart, and on the Easternmost one is a May Cherry out of the Cherry Walk. 1 other on a Stock just above the 2d. Gate. Note this is on the Northernmost prong; the other Graft on the said stock is of the May Cherry in the Cherry Walk.

15. Grafted 6 Early May duke Cherrys on the Nursery, begin'g at that end of the first Row next to the Lane -- the Row next the Quarter is meant; at the end of this a Stake drove in.

15. Also Grafted joining to these in the same Row 6 of the latter May dukes -- which are all the Cherrys in the Row. Also Grafted 7 Bullock Heart Cherrys in the last Row.

30. Grafted 48 Pears which stand as follows, viz. in the 3d Row begining. at the end next the Cherry Walk are 12 Spanish Pears; next to these are 8 Early June Pears; then 10 latter Bergamy; then 8 Black Pear of Worcester; and lastly 10 Early Bergamy. Note, all these Pears came from Colo. Mason's: and between each sort a Stick is drove down. The Rows are counted from the end of the Quarter.

30. This day also I grafted 39 New Town Pippins, which compleat the 5th Row and which Row are all of this kind of Fruit now.

30. The 6th Row is compleated with Grafts of the Maryland Red Strick, which are all of this sort of Fruit, and contains [] trees; so is the 8th Row of this Apple, also 54 in number and 20 in the 9th Row beginning next the Cherry Walk.

30 The 7th. Row has 25 Graffs of the Gloster white Apple which compleats this Row with that sort of Fruit. - J. C. Fitzpatrick, ed., The Diaries of George Washington, 1748-1799, 1:209-211 (Boston and New York, Houghton Mifflin Co., 1925).

Washington was one of the pioneers in the use of improved agricultural machinery. The following entry from his Diary for April 1786 tells something of his experiences with various grain drills and is also notable for its description of seeding as practiced in the late eighteenth century.

Saturday, 8th. Rid a little after Sun rise to Muddy [hole], to try my drill plow again which, with the alteration of the harrow yester-

day, I find will fully answer my expectation, and that it drops the grains thicker, or thinner in proportion to the quantity of seed in the Barrel. The less there is in it the faster it issues from the holes. The weight of a quantity in the barrel, occasions (I presume) a pressure on the holes that do not admit of a free discharge of the Seed through them, whereas a small quantity (sufficient at all times to cover the bottom of the barrel) is, in a manner sifted through them by the revolution of the Barrel.

I sowed with the barrel to day, in drills, about 3 pints of a white well looking Oat, brought from Carolina last year by G. A. Washington in 7 rows running from the path leading from the Overseer's Ho. to the Quarter to the West fence of the field, which the ground was in the best order. Afterwards I sowed in such other parts of the adjoining ground as could at any rate be worked the common Oat of the Eastern shore (after picking out the Wild onion); but in truth nothing but the late Season could warrant sowing in ground so wet.

None of the ground in wch. these Oats were sown had received any improvement from Manure, but all of it had been twice plowed, and then listed, after which the harrow had gone over it twice before the seed harrowing. This, had it not been for the frequent rains, etca., which has fallen would have put the ground in fine order.

Transplanted as many of the large Magnolio into the Grove at the No. end of the Ho. as made the number there.

Also transplanted from the same box, 9 of the live Oak, viz. 4 in the bends of the lawn before the House, and five on the East of the grove (within the yard) at the No. end of the House.

Plowed up my last years turnip patch (at home) to sow Orchard grass seeds in.

No fish caught to day. . . .

Monday, 10th. Began my brick work to day, first taking away the foundations of the Garden Houses as they were first placed, and repairing the damages in the Walls occasioned by their removal; and also began to put up my pallisades (on the Wall).

Compleated Sowing with 20 quarts the drilled Oats in the ground intended for experiments at Muddy hole; which amounted to 38 rows, ten feet apart (including the parts of rows sowed on Saturday last). In the afternoon I began to sow Barley, but finding there were too many Seeds discharged from the Barrel, notwithstanding I stopped every other hole, I discontinued the sowing until another Barrel with smaller

holes cd. be prepared. The ground, in which these Oats have been sowed and in which the Barley seeding had commenced, has been plowed, cross plowed, listed (as it is called, that is 3 furrow ridges) and twice harrowed before the drill plow was put into it; with this the furrow is made and the seed harrowed in with the manure afterwds.

Began also to sow the Siberian Wheat which I had obtained from Baltimore by means of Colo. Tilghman, at the Ferry Plantation in the ground laid apart there for experiments. This was done upon ground which, sometime ago, had been marked off by furrows 8 feet apart, in which a second furrow had been run to deepen them. 4 furrows were then plowed to these, which made the whole 5 furrow Ridges. These being done sometime ago, and by frequent rains prevented sowing at the time intended had got hard, I therefore before the seed was sowed, split these Ridges again, by running twice in the same furrow. After wch. I harrowed the ridges, and where the ground was lumpy run my spiked Roller with the Harrow at the tale over it, wch. I found very efficacious in breaking the clods and pulverising the earth; and wd. have done it perfectly if there had not been too much moisture remaining of the late rains; after this harrowing and rolling where necessary, I sowed the Wheat with my drill plow on the reduced ridges in rows 8 feet apart. But I should have observed that, after the ridges were split by the furrow in the middle, and before the furrows were closed again by the harrow, I sprinkled a little dung in them. Finding the barrel discharged the Wheat too fast, I did, after sowing 9 of the shortest (for we began at the furthest corner of the field) rows, I stopped every other hole in the barrel, and in this manner sowed 5 rows more, and still thinking the seed too liberally bestowed, I stopped 2, and left one hole open, alternately, by which 4 out of 12 holes only, discharged seeds; and this, as I had taken the strap of leather off, seemed to give seed enough (though not so regular as were to be wished) to the ground. - J. C. Fitzpatrick, ed., The Diaries of George Washington, 1748-1799, 3:38-41 (Boston and New York, Houghton Mifflin Co., 1925).

Washington continued his interest in the latest developments in agriculture during his residence in New York as President of the United States.

Baron Poellnitz, who conducted an experimental farm near Murray Hill, urged Washington to encourage the Government to undertake a similar enterprise. In January 1790, Washington visited the Baron's farm, primarily to inspect a threshing machine, and recorded the following description in his Diary

Friday, 22d. Exercised on horseback in the forenoon.

Called in my ride on the Baron de Polnitz, to see the operation of

his (Winlaw's) threshing machine. The effect was, the heads of the wheat being seperated from the straw, as much of the first was run through the mill in 15 minutes as made half a bushel of clean wheat -- allowing 8 working hours in the 24, this would yield 16 bushels pr. day. Two boys are sufficient to turn the wheel, feed the mill, and remove the threshed grain after it has passed through it. Two men were unable, by winnowing, to clean the wheat as it passed through the mill, but a common Dutch fan, with the usual attendance, would be more than sufficient to do it. The grain passes through without bruising and is well separated from the chaff. Women, or boys of 12 or 14 years of age, are fully adequate to the management of the mill or threshing machine. Upon the whole, it appears to be an easier, more expeditious, and much cleaner way of getting out grain than by the usual mode of threshing; and vastly to be preferred to treading, which is hurtful to horses, filthy to the wheat, and not more expeditious, considering the numbers that are employed in the process from the time the head is begun to be formed until the grain has passed finally through the fan. - J. C. Fitzpatrick, ed., The Diaries of George Washington, 1748-1799, 4:72-73 (Boston and New York, Houghton Mifflin Co., 1925).

WASHINGTON TO ARTHUR YOUNG, FROM MOUNT VERNON, AUGUST 6, 1786

This letter to Arthur Young, the foremost propagandist for improved agriculture in his time, registers the great interest and enthusiasm of Washington for agriculture. His pointed criticism of those who looked askance at anything new in agriculture is of special moment.

I have had the honour to receive your letter of the seventh of January, from Bradfield-Hall, in Suffolk, and thank you for the favour of opening a correspondence, the advantages of which will be so much in my favour.

Agriculture has ever been amongst the most favourite amusements of my life, though I never possessed much skill in the art; and nine years total inattention to it, has added nothing to a knowledge which is best understood from practice; but with the means you have been so obliging as to furnish me, I shall return to it (though rather late in the day) with hope and confidence.

The system of agriculture, if the epithet of system can be applied to it, which is in use in this part of the United States, is as

or cutting, you would oblige me by adding a small quantity of the seeds, to put me in stock. Early grasses, unless a species can be found that will stand a hot sun, and oftentimes severe droughts in the summer months, without much expense of cultivation, would suit our climate best.

You see, Sir, that without ceremony, I avail myself of your kind offer; but if you should find in the course of our correspondence, that I am likely to become troublesome, you can easily check me. Inclosed I give you an order on Wakelin Welch, Esq. for the cost of such things as you may have the goodness to send me. I do not at this time ask for any other implements of husbandry than the ploughs; but when I have read your Annals (for they are but just come to hand) I may request more. In the meanwhile, permit me to ask what a good ploughman might be had for: annual wages, to be found (being a single man) in board, washing, and lodging? The writers upon husbandry estimate the hire of labourers so differently in England, that it is not easy to discover from them, whether one of the class I am speaking of would cost eight or eighteen pounds a year. A good ploughman at low wages, would come very opportunely with the ploughs here requested.

By means of the application I made to my friend Mr. Fairfax, of Bath, and through the medium of Mr. Rack, a bailiff is sent to me, who, if he is acquainted with the best courses of cropping, will answer my purposes as a director or superintendent of my farms. He has the appearance of a plain honest farmer;--is industrious;-- and from the character given of him by a Mr. Peacy, with whom he has lived many years, has understanding in the management of stock, and of most matters for which he is employed. How far his abilities may be equal to a pretty extensive concern, is questionable. And what is still worse, he has come over with improper ideas; for instead of preparing his mind to meet a ruinous course of cropping, exhausted lands, and numberless inconveniences into which we had been thrown by an eight years war, he seems to have expected that he was coming to well organized farms, and that he was to have met ploughs, harrows, and all the other implements of husbandry, in as high taste as the best farming counties in England could have exhibited them. How far his fortitude will enable him to encounter these disappointments, or his patience and perseverance will carry him towards the work of reform, remains to be decided.

With great esteem, I have the honour to be, Sir, your most obedient, humble servant, G. WASHINGTON. - Letters on Agriculture from His Excellency George Washington ... edited by Franklin Knight, p. 15-18 (Washington, D. C., 1847).

unproductive to the practitioners as it is ruinous to the land-holders. Yet it is pertinaciously adhered to. To forsake it, to pursue a course of husbandry which is altogether different and new to the gazing multitude, ever averse to novelty in matters of this sort, and much attached to their old customs, requires resolution; and without a good practical guide, may be dangerous; because, of the many volumes which have been written on this subject, few of them are founded on experimental knowledge--are verbose, contradictory, and bewildering. Your Annals shall be this guide. The plan on which they are published, gives them a reputation which inspires confidence; and for the favour of sending them to me, I pray you to accept my very best acknowledgments. To continue them, will add much to the obligation.

To evince with what avidity, and with how little reserve, I embrace the polite and friendly offer you have made me, of supplying me with "men, cattle, tools, seeds, or any thing else that may add to my rural amusement," I will give you, Sir, the trouble of providing, and sending to the care of Wakelin Welch, Esq. of London, merchant, the following articles:

Two of the simplest and best-constructed ploughs for land which is neither very heavy nor sandy. To be drawn by two horses--to have spare shares and coulter--and a mould on which to form new irons when the old ones are worn out, or will require repairing.

I shall take the liberty in this place to observe, that some years ago, from a description, or recommendation of what was then called the Rotherham, or patent plough, I sent to England for one of them; and till it began to wear, and was ruined by a bungling country smith, that no plough could have done better work, or appeared to have gone easier with two horses; but for want of a mould, which I had neglected to order with the plough, it became useless after the irons which came in with it were much worn.

A little of the best kind of cabbage-seeds, for field culture.
Twenty pounds of the best turnip-seeds, for ditto.
Ten bushels of sainfoin-seeds.
Eight bushels of the winter vetches.
Two bushels of rye-grass seeds.
Fifty pounds of hop clover-seeds.

And, if it is decided, for much has been said for and against it, that burnet, as an early food, is valuable, I should be glad of a bushel of this seed also. Red clover-seeds are to be had on easy terms in this country, but if there are any other kinds of grass-seeds, not included in the above, that you may think valuable, especially for early feeding

WASHINGTON TO ARTHUR YOUNG, FROM MOUNT VERNON, DECEMBER 4, 1788.

The following letter reiterates Washington's attitude toward agriculture.

* * * *

The more I am acquainted with agricultural affairs, the better I am pleased with them; insomuch, that I can no where find so great satisfaction as in those innocent and useful pursuits. In indulging these feelings, I am led to reflect how much more delightful to an undebauched mind is the task of making improvements on the earth, than all the vain glory which can be acquired from ravaging it, by the most uninterrupted career of conquests. The design of this observation, is only to show how much, as a member of human society, I feel myself obliged, by your labours to render respectable and advantageous, an employment which is more congenial to the natural dispositions of mankind than any other. . . . -- Letters on Agriculture from His Excellency George Washington ... edited by Franklin Knight, p. 24-27 (Washington, D. C., 1847).

WASHINGTON TO ARTHUR YOUNG, FROM PHILADELPHIA, DECEMBER 12, 1793

This letter gives a detailed and careful description of Mount Vernon. The map on page 19, sketched by Washington to accompany this letter.

* * * *

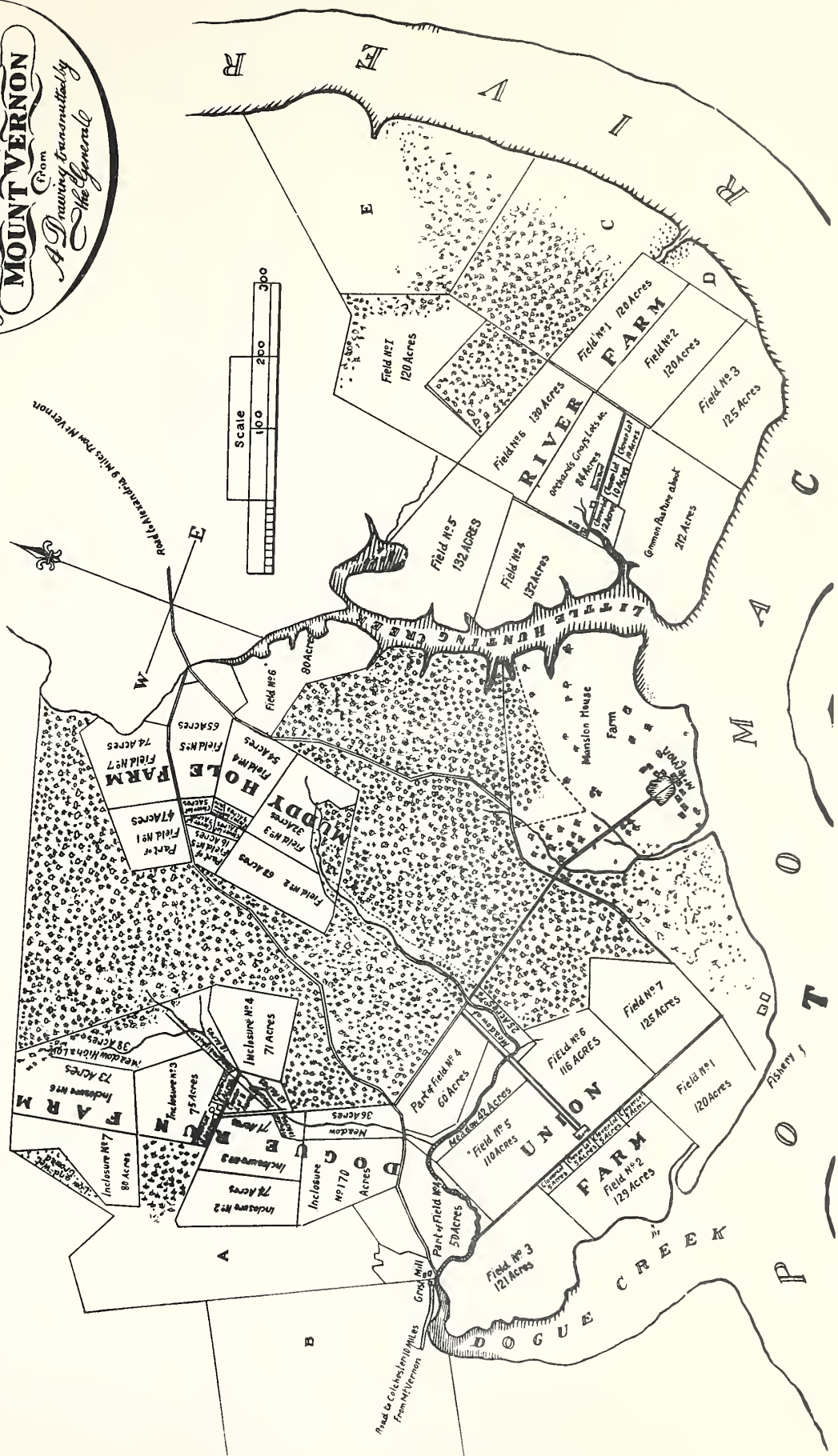
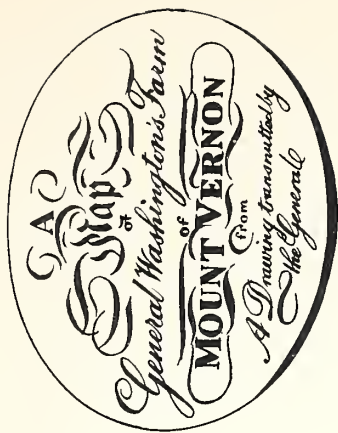
All my landed property, east of the Appalachian mountains, is under rent, except the estate called Mount Vernon. This, hitherto, I have kept in my own hands: but from my present situation, from my advanced time of life, from a wish to live free from care, and as much at my ease as possible, during the remainder of it, and from other causes, which are not necessary to detail, I have, latterly, entertained serious thoughts of letting this estate also, reserving the mansion-house farm for my own residence, occupation, and amusement in agriculture; provided I can obtain what, in my own judgment, and in

MAP OF MOUNT VERNON SENT BY WASHINGTON TO ARTHUR YOUNG, 1793

References

- A With these lines one or two well sized and convenient tracts might be formed - The greater part of the land is capable of being improved for mowing; very few; part of it is already well improved and part will be improved by mowing to be drained. There are the houses on it.
 B Great part within these lines is very good, but there is a sufficient quantity of good cleared and in cultivation, for a middle sized farm, with a house on it; and a most beautiful old grove of chestnuts and oaks in a line, on it.
 C By the same, and the whole is cleared land, but has no house on it.
 D It also cleared land, and might be added to River farm; or, if that farm were to be outlived, it might form part of the main one, offering pleasant sites for houses on the bank of the River.
 E The use of this farm is altered to a station.

FAC SIMILE



the opinion of others whom I have consulted, the low rent which I shall mention hereafter; and provided also I can settle it with good farmers.

The quantity of ploughable land (including meadow), the relative situation of the farms to one another, and the division of these farms into separate inclosures, with the quantity and situation of the woodland appertaining to the tract, will be better delineated by the sketch herewith sent (which is made from actual surveys, subject, nevertheless, to revision and correction), than by a volume of words.

No estate in United America, is more pleasantly situated than this. It lies in a high, dry, and healthy country, three hundred miles by water from the sea, and, as you will see by the plan, on one of the finest rivers in the world. Its margin is washed by more than ten miles of tide-water; from the bed of which, and the innumerable coves, inlets, and small marshes, with which it abounds, an inexhaustible fund of rich mud may be drawn, as a manure, either to be used separately, or in a compost, according to the judgment of the farmer. It is situated in a latitude between the extremes of heat and cold, and is the same distance by land and water, with good roads, and the best navigation (to and) from the Federal City, Alexandria, and Georgetown; distant from the first, fifteen, from the second, nine, and from the last, sixteen miles. The Federal City, in the year 1800, will become the seat of the general government of the United States. It is increasing fast in buildings, and rising into consequence; and will, I have no doubt, from the advantages given to it by nature, and its proximity to a rich interior country, and the western territory, become the emporium of the United States.

The soil of the tract of which I am speaking, is a good loam, more inclined, however, to clay than sand. From use, and I might add, abuse, it is become more and more consolidated, and of course heavier to work. The greater part is a greyish clay; some part is a dark mould; a very little is inclined to sand, and scarcely any to stone. A husbandman's wish would not lay the farms more level than they are; and yet some of the fields (but in no great degree) are washed into gullies, from which all of them have not as yet been recovered.

This river, which encompasses the land the distance above-mentioned, is well supplied with various kinds of fish, at all seasons of the year; and, in the spring, with the greatest profusion of shad, herrings, bass, carp, perch, sturgeon, &c. Several valuable fisheries appertain to the estate; the whole shore, in short, is one entire fishery.

There are, as you will perceive by the plan, four farms besides

that at the mansion-house. These four contain three thousand two hundred and sixty acres of cultivable land, to which some hundreds more, adjoining, as may be seen, might be added, if a greater quantity should be required; but as they were never designed for, so neither can it be said they are calculated to suit, tenants of either the first, or of the lower class; because those who have the strength and resources proportioned to farms of from five hundred to twelve hundred acres (which these contain), would hardly be contented to live in such houses as are thereon: and if they were to be divided and subdivided, so as to accommodate tenants of small means, say from fifty to one or two hundred acres, there would be none, except on the lots which might happen to include the present dwelling-houses of my overlookers (called bailiffs with you), barns, and negro-cabins: nor would I choose to have the woodland (already too much pillaged of its timber) ransacked, for the purpose of building many more. The soil, however, is excellent for bricks, or for mud-walls; and to the building of such houses there would be no limitation, nor to that of thatch for the cover of them.

The towns already mentioned (to those who might incline to encounter the expense), are able to furnish scantling, plank, and shingles, to any amount, and on reasonable terms; and they afford a ready market also for the produce of the land.

On what is called Union Farm (containing nine hundred and twenty-eight acres of arable and meadow), there is a newly erected brick barn, equal, perhaps, to any in America, and for conveniences of all sorts, particularly for sheltering and feeding horses, cattle, &c. scarcely to be exceeded anywhere. A new house is now building in a central position, not far from the barn, for the overlooker, which will have two rooms, sixteen by eighteen feet below, and one or two above nearly of the same size. Convenient thereto, is sufficient accommodation for fifty odd negroes, old and young; but these buildings might not be thought good enough for the workmen, or day-labourers, of your country.

Besides these, a little without the limits of the farm (as marked in the plan) are one or two other houses, very pleasantly situated, and which, in case this farm should be divided into two (as it formerly was), would answer well for the eastern division. The buildings thus enumerated, are all that stand on the premises.

Dogue Run Farm (six hundred and fifty acres) has a small, but new building for the overlooker; one room only below, and the same above, sixteen by twenty feet each; decent and comfortable for its size. It has also covering for forty odd negroes, similar to what is

mentioned on Union Farm. It has a new circular barn, now finishing, on a new construction; well calculated, it is conceived, for getting grain out of the straw more expeditiously than in the usual mode of threshing. There are good sheds also erecting, sufficient to cover thirty work-horses and oxen.

Muddy-hole Farm (four hundred and seventy six acres) has a house for the overlooker, in size and appearance nearly like that at Dogue Run, but older: the same kind of covering for about thirty negroes, and a tolerable good barn, with stables for the work-horses.

River Farm, which is the largest of the four, and separated from the others by Little Hunting Creek, contains twelve hundred and seven acres of ploughable land, has an overlooker's house of one large, and two small rooms below, and one or two above; sufficient covering for fifty or sixty negroes, like those before mentioned; a large barn, and stables, gone much to decay, but will be replaced next year, with new ones.

I have deemed it necessary to give this detail of the buildings, that a precise idea might be had of the conveniences and inconveniences of them; and I believe the recital is just in all its parts. The inclosures are precisely and accurately delineated in the plan; and the fences now are, or soon will be, in respectable order.

I would let these four farms to four substantial farmers, of wealth and strength sufficient to cultivate them, and who would ensure to me the regular payment of the rents; and I would give them leases for seven or ten years, at the rate of a Spanish milled dollar, or other money current at the time, in this country, equivalent thereto, for every acre of ploughable and mowable ground, within the inclosures of the respective farms, as marked in the plan; and would allow the tenants, during that period, to take fuel, and use timber from the woodland, to repair the buildings, and to keep the fences in order until live fences could be substituted in place of dead ones; but in this case no sub-tenants would be allowed.

Or if these farms are adjudged too large, and the rents, of course, too heavy for such farmers as might incline to emigrate, I should have no insuperable objection against dividing each into as many small ones, as a society of them, formed for the purpose, could agree upon, among themselves; even if it should be by the fields, as they are now arranged (which the plan would enable them to do), provided such buildings as they would be content with, should be erected at their own expense, in the manner already mentioned. In which case, as in the former, fuel, and timber for repairs, would be allowed; but, as an inducement to parcel out my grounds into such small tenements,

and to compensate me, at the same time, for the greater consumption of fuel and timber, and for the trouble and expense of collecting small rents, I should expect a quarter of a dollar per acre, in addition to what I have already mentioned. But in order to make these small farms more valuable to the occupants, and by way of reimbursing them for the expense of their establishment thereon, I would grant them leases for fifteen or eighteen years; although I have weighty objections to the measure, founded on my own experience, of the disadvantage it is to the lessor, in a country where lands are rising every year in value. As an instance in proof, about twenty years ago, I gave leases for three lives, in land I held above the Blue Mountains, near the Shenandoah river, seventy miles from Alexandria, or any shipping port, at a rent of one shilling per acre (no part being then cleared); and now land of similar quality, in the vicinity, with very trifling improvements thereon, is renting, currently, at five, and more shillings per acre, and even as high as eight.

My motives for letting this estate having been avowed, I will add, that the whole (except the Mansion-House farm), or none, will be parted with, and that upon unequivocal terms; because my object is, to fix my income (be it what it may) upon a solid basis, in the hands of good farmers; because I am not inclined to make a medley of it; and, above all, because I could not relinquish my present course, without a moral certainty of the substitute which is contemplated: for to break up these farms, remove my negroes, and to dispose of the property on them, upon terms short of this, would be ruinous.

Having said thus much, I am disposed to add further, that it would be in my power, and certainly it would be my inclination (upon the principle above), to accommodate the wealthy, or the weak-handed farmer (and upon reasonable terms) with draught-horses, and working mules and oxen; with cattle, sheep, and hogs; and with such implements of husbandry, if they should not incline to bring them themselves, as are in use on the farms. On the four farms there are fifty-four draught-horses, twelve working mules, and a sufficiency of oxen, broke to the yoke; the precise number I am unable this moment to ascertain, as they are comprehended in the aggregate of the black cattle: of the latter, there are three hundred and seventeen; of sheep, six hundred and thirty-four; of hogs, many; but as these run pretty much at large in the woodland (which is all under fence), the number is uncertain. Many of the negroes, male and female, might be hired by the year, as labourers, if this should be preferred to the importation of that class of people; but it deserves consideration, how far the mixing of whites and blacks together is advisable; especially where the former are entirely unacquainted with the latter.

If there be those who are disposed to take these farms in their

undivided state, on the terms which have been mentioned, it is an object of sufficient magnitude for them, or one of them in behalf of the rest, to come over and investigate the premises thoroughly, that there may be nothing to reproach themselves, or me, with, if (though unintentionally) there should be defects in any part of the information herein given; or, if a society of farmers are disposed to adventure, it is still more incumbent on them to send over an agent, for the purpose above-mentioned; for with me the measure must be so fixed, as to preclude any cavil or discussion thereafter. And it may not be mal apropos to observe in this place, that our overlookers are generally engaged, and all the arrangements for the ensuing crops are made, before the first of September in every year: it will readily be perceived, then, that if this period is suffered to pass away, it is not to be regained until the next year. Possession might be given to the new-comers at the season just mentioned, to enable them to put in their grain for the next crop: but the final relinquishment could not take place until the crops are gathered; which of Indian corn (maize), seldom happens till toward Christmas, as it must endure hard frosts before it can be safely housed.

I have endeavoured, as far as my recollection of facts would enable me, or the documents in my possession allow, to give such information of the actual state of the farms, as to enable persons at a distance to form as distinct ideas as the nature of the thing is susceptible, short of one's own view: and having communicated the motives which have inclined me to a change in my system, I will announce to you the origin of them.

First. Few ships, of late, have arrived from any part of Great Britain, or Ireland, without a number of emigrants; and some of them, by report, very respectable and full-handed farmers. A number of others, they say, are desirous of following, but are unable to obtain passages; but their coming in that manner, even if I was apprized of their arrival in time, would not answer my views, for the reason already assigned; and which, as it is the ultimatum at present, I will take the liberty of repeating, namely, that I must carry my plan into complete execution, or not attempt it; and under such auspices, too, as to leave no doubt of the exact fulfilment: and,

2dly. Because from the number of letters which I have received myself, (and, as it would seem, from respectable people,) inquiring into matters of this sort, with intimations of their wishes, and even intentions, of migrating to this country, I can have no doubt of succeeding. But I have made no reply to these inquiries; or, if any, in very general terms; because I did not want to engage in correspondences of this sort with persons of whom I had no knowledge, nor indeed leisure for them, if I had been so disposed.

I shall now conclude as I began, with a desire, that if you see any impropriety in making these sentiments known to that class of people who might wish to avail themselves of the occasion, that it may not be mentioned. By a law, or by some regulation of your government, artisans, I am well aware, are laid under restraints; and, for this reason, I have studiously avoided any overtures to mechanics, although my occasions called for them. But never having heard that difficulties were thrown in the way of husbandmen by the government, is one reason for my bringing this matter to your view. A second is, that having yourself expressed sentiments which showed that you had cast an eye towards this country, and was not inattentive to the welfare of it, I was led to make my intentions known to you, that if you, or your friends, were disposed to avail yourselves of the knowledge, you might take prompt measures for the execution. And, 3dly, I was sure, if you had lost sight of the object yourself, I could, nevertheless, rely upon such information as you might see fit to give me, and upon such characters, too, as you might be disposed to recommend.

Lengthy as this epistle is, I will crave your patience while I add, that it is written in too much haste, and under too great a pressure of public business, at the commencement of an important session of Congress, to be correct, or properly digested. But the season of the year, and the apprehension of ice, are hurrying away the last vessel bound from this port to London. I am driven, therefore, to the alternative of making the matter known in this hasty manner, and giving a rude sketch of the farms, which is the subject of it; or to encounter delay---the first I preferred. It can hardly be necessary to add, that I have no desire that any formal promulgation of these sentiments should be made.... - Letters on Agriculture from His Excellency George Washington ... edited by Franklin Knight, p. 114-122 (Washington, D.C., 1847).

WASHINGTON TO SIR JOHN SINCLAIR, FROM PHILADELPHIA, JULY 20, 1794.

In the following letter, Washington commented on the value of the county agricultural surveys which were being sponsored by the English Board of Agriculture. The letter also includes comparisons of English and American agriculture and the possibilities of agricultural societies in the United States.

* * * *

I have read with peculiar pleasure and approbation, the work you patronise, so much to your own honor and the utility of the public. -- Such a general view of the agriculture in the several counties of Great Britain is extremely interesting; and cannot fail of being very beneficial to the agricultural concern of your Country and to those of every other wherein they are read, and must entitle you to their warmest thanks for having set such a plan on foot, and for prosecuting it with the zeal & intelligence you do.--

* * * *

I know of no pursuit in which more real & important service can be rendered to any Country, than by improving its agriculture--its breed of useful animals--and other branches of a husbandman's cares;--nor can I conceive any plan more conducive to this end than the one you have introduced for bringing to view the actual state of them, in all parts of the Kingdom;--by which good & bad habits are exhibited in a manner too plain to be misconceived; for the accounts given to the British board of Agriculture, appear in general, to be drawn up in a masterly manner, so as fully to answer the expectations formed in the excellent plan wh produced them; affording at the same-time a fund of information useful in political oeconomy--serviceable in all countries.

Commons--Tithes--Tenantry (of which we feel nothing in this country) are in the list of impediments I perceive, to perfection in English farming--and taxes are heavy deduction from the profit thereof--Of these we have none, or so light as hardly to be felt.--Your system of Agriculture, it must be confessed, is in a stile superior & of course much more expensive than ours, but when the balance at the end of the year is struck, by deducting the taxes, poor rates, and incidental charges of every kind, from the produce of the land, in the two Countries, no doubt can remain in which Scale it is to be found.

It will be sometime I fear, before an Agricultural Society with Congressional aids will be established in this Country;--we must walk as other countries have done before we can run, Smaller Societies must prepare the way for greater, but with the light before us, I hope we shall not be so slow in maturation as older nations have been.-- An attempt, as you will perceive by the enclosed outlines of a plan, is making to establish a State Society in Pennsylvania for agricultural improvements.--If it succeeds, it will be a step in the ladder, at present it is too much in embryo to decide on the result.--

Our domestic animals, as well as our agriculture, are inferior to yours in point of size but this does not proceed from any defect in the stamina of them, but to deficient care in providing for their support; experience having abundantly evinced that where our pasture areas well improved as the soil & climate will admit;--where a competent store of wholesome provender is laid up and proper care used in serving it, that our horses, black cattle, Sheep &c. are not inferior to the best of their respective kinds which have been imported from England.--Nor is the wool of our Sheep inferior to that of the common sort with you:--as a proof--after the Peace of Paris in 1783, and my return to the occupations of a farmer, I paid particular attention to my breed of sheep (of which I usually kept about seven or eight hundred).--By this attention, at the shearing of 1789, the fleeces yielded me the average quantity of $5\frac{1}{4}$ £ of wool;--a fleece of which, promiscuously taken, I sent to Mr. Arthar Young, who put it, for examination, into the hands of Manufacturers.--These pronounced it to be equal in quality to the Kentish Wool.-- In this same year, i.e. 1789 I was again called from home, and have not had it in my power since to pay any attention to my farm;-- The consequence of which is, that my Sheep, at the last shearing, yielded me not more than $2\frac{1}{2}$ £.-- This is not a single instance of the difference between care and neglect.-- Nor is the difference between good & bad management confined to that species of Stock; for we find that good pastures and proper attention, can & does, fill our markets with beef of seven, eight & more hundred weight the four quarters; whereas from 450 to 500 (especially in the States South of this where less attention hitherto has been paid to grass) may be found about the average weight.-- In this market, some Bullocks were killed in the months of March & April last, the weights of wch, as taken from the accounts which were published at the time, you will find in a paper enclosed.-- These were pampered steers, but from 800 to a thousand, the four quarters, is no uncommon weight.

Your general history of Sheep, with observations thereon, and the proper mode of managing them, will be an interesting work when

completed; and with the information, & accuracy I am persuaded it will be executed, under your auspices, must be extremely desirable.--- The climate of this Country, particularly that of the middle states is congenial to this species of animal; but want of attention to them in most farmers, added to the obstacles which prevent the importation of a better herd, by men who would be at the expence, contributes not a little to the present inferiority we experience....

Both Mr. Adams and Mr. Jefferson had the perusal of the papers which accompanied your note of the 11th of Sep.

With great respect and esteem I have the honor to be Sir,
Your Obed Servt. G. Washington. - Letters from His Excellency George Washington ... to Sir John Sinclair ... p. 21-28 (London, W. Bulmer and Co., 1800).

WASHINGTON TO JEFFERSON, FROM MOUNT VERNON, OCTOBER 4, 1795

The early leaders like Washington and Jefferson had a mutual interest in agricultural advancement and exchanged views on the subject. The following is an example.

* * * *

I am much pleased with the account you have given of the succory. This, like all other things of the sort with me, since my absence from home, has come to nothing; for neither my overseers nor manager will attend properly to any thing but the crops they have usually cultivated; and, in spite of all I can say, if there is the smallest discretionary power allowed them, they will fill the land with Indian corn, although even to themselves there are the most obvious traces of its baneful effects. I am resolved, however, as soon as it shall be in my power to attend a little more closely to my own concerns, to make this crop yield in a degree to other grain, to pulses, and to grasses. I am beginning again with chiccory, from a handful of seed given me by Mr. Strickland, which, though flourishing at present, has no appearance of seeding this year. Lucerne has not succeeded better with me than with you; but I will give it another and a fairer trial before it is abandoned altogether. Clover, when I can dress lots well, succeeds with me to my full expectation, but not on the fields in rotation, although I have been at much cost in seeding them. This has greatly disconcerted the system of rotation on which I had decided.

I wish you may succeed in getting good seed of the winter vetch. I have often imported it, but the seed never vegetated, or in so small a proportion, as to be destroyed by weeds. I believe it would be an acquisition, if it was once introduced properly in our farms. The Albany pea, which is the same as the field pea of Europe, I have tried, and found it will grow well; but is subject to the same bug which perforates the garden pea, and eats out the kernel. So it will happen, I fear, with the pea you propose to import. I had great expectation from a green dressing with buckwheat, as a preparatory fallow for a crop of wheat, but it has not answered my expectation yet. I ascribe this, however, more to mismanagement in the times of seeding and ploughing in, than any defect of the system. The first ought to be so ordered, in point of time, as to meet a convenient season for ploughing it in, while the plant is in its most succulent state. But this has never been done on my farms, and consequently has drawn as much from, as it has given to the earth. It has always appeared to me that there were two modes in which buckwheat might be used advantageously as a manure. One, to sow early, and, as soon as a sufficiency of seed is ripened, to stock the ground a second time, to turn the whole in, and when the succeeding growth is getting in full bloom, to turn that in also, before the seed begins to ripen; and, when the fermentation and putrefaction ceases, to sow the ground in that state, and plough in the wheat. The other mode is, to sow the buckwheat so late, as that it shall be generally about a foot high at the usual seeding of wheat; then turn it in, and sow thereon immediately, as on a clover lay, harrowing in the seed lightly to avoid disturbing the buried buckwheat. I have never tried the latter method, but see no reason against its succeeding. The other, as I observed above, I have prosecuted, but the buckwheat has always stood too long, and consequently had got too dry and sticky to answer the end of a succulent plant.

But of all the improving and ameliorating crops, none in my opinion is equal to potatoes, on stiff and hard bound land, as mine is. I am satisfied, from a variety of instances, that on such land a crop of potatoes is equal to an ordinary dressing. In no instance have I failed of good wheat, oats, or clover, that followed potatoes; and I conceive they give the soil a darker hue. I shall thank you for the result of your proposed experiment relative to the winter vetch and pea when they are made.

I am sorry to hear of the depredations committed by the weevil in your parts; it is a great calamity at all times, and this year, when the demand for wheat is so great, and the price so high, must be a mortifying one to the farmers. The rains have been very general, and more abundant since the 1st of August, than ever happened in a summer within the memory of man. Scarcely a mill-dam, or bridge, between this and Philadelphia, was able to resist them, and some were carried off a second and third time.

Mrs. Washington is thankful for your kind remembrance of her, and unites with me in best wishes for you. With very great esteem and regard, I am, dear Sir, &c. - E. W. Brooke, ed., The Agricultural Papers of George Washington, p. 92-95 (Boston, Gorham Press, 1919).

LAST ANNUAL MESSAGE TO CONGRESS, DECEMBER 7, 1796

In his first, third, and seventh annual messages on the state of the Nation, Washington specifically recommended that Congress give general attention to the advancement of agriculture, commerce, and manufactures. In his last annual message to Congress on December 7, 1796, he urged the creation of a board of agriculture which, had the proposal been adopted, might well have developed into a Department of Agriculture. The Nation had to wait many years for the executive department which he envisioned.

It will not be doubted that with reference either to individual or national welfare agriculture is of primary importance. In proportion as nations advance in population and other circumstances of maturity this truth becomes more apparent, and renders the cultivation of the soil more and more an object of public patronage. Institutions for promoting it grow up, supported by the public purse; and to what object can it be dedicated with greater propriety? Among the means which have been employed to this end none have been attended with greater success than the establishment of boards (composed of proper characters) charged with collecting and diffusing information, and enabled by premiums and small pecuniary aids to encourage and assist a spirit of discovery and improvement. This species of establishment contributes doubly to the increase of improvement by stimulating to enterprise and experiment, and by drawing to a common center the results everywhere of individual skill and observation, and spreading them thence over the whole nation. Experience accordingly has shewn that they are very cheap instruments of immense national benefits. - J. D. Richardson, ed., A Compilation of the Messages and Papers of the Presidents, 1:202 (Washington, Govt. Print. Off., 1896).

WASHINGTON TO WILLIAM STRICKLAND, FROM MOUNT VERNON, JULY 15, 1797

This letter was written in response to the Englishman's criticism of the agricultural methods which were being followed in the United States at the end of the eighteenth century.

I have been honored with yours of the 30th of May and 5th of September of last year. As the first was in part an answer to a letter I took the liberty of writing to you, and the latter arrived in the middle of an important session of Congress I postponed, from the pressure of business occasioned thereby, the acknowledgment of all private letters, which did not require immediate answers, until I should be seated under my own vine and fig-tree, where I supposed I should have abundant leisure to discharge all my epistolary obligations.

In this, however, I have hitherto found myself mistaken; for at no period have I been more closely employed in repairing the ravages of an eight years' absence. Engaging workmen of different sorts, providing and looking after them, together with the necessary attention to my farms, have occupied all my time since I have been at home.

I was far from entertaining sanguine hopes of success in my attempt to procure tenants from Great Britain; but, being desirous of rendering the evening of my life as tranquil and free from care as the nature of things would admit, I was willing to make the experiment.

Your observation, with respect to occupiers and proprietors of land has great weight, and, being congenial with my own ideas on the subject, was one reason, though I did not believe it would be so considered, why I offered my farms to be let. Instances have occurred, and do occur daily, to prove that capitalists from Europe have injured themselves by precipitate purchases of free-hold estates, immediately upon their arrival in this country, while others have lessened their means in exploring States and places in search of locations; whereas, if on advantageous terms they could have been first seated as tenants, they would have had time and opportunities to become holders of land, and for making advantageous purchases. But it is so natural for man to wish to be the absolute lord and master of what he holds in occupancy, that his true interest is often made to yield to a false ambition. Among these, the emigrants from the New England States may be classed, and this will account, in part, for their migration to the westward. Conviction of these things having left little hope of

obtaining such tenants as would answer my purposes, I have had it in contemplation, ever since I returned home, to turn my farms to grazing principally, as fast as I can cover the fields sufficiently with grass. Labor, and of course expense, will be considerably diminished by this change, the net profit as great, and my attention less divided, whilst the fields will be improving.

Your strictures on the agriculture of this country are but too just. It is indeed wretched; but a leading, if not the primary, cause of its being so is, that, instead of improving a little ground well, we attempt much and do it ill. A half, a third, or even a fourth of what we mangle, well wrought and properly dressed, would produce more than the whole under our system of management; yet such is the force of habit, that we cannot depart from it. The consequence of which is, that we ruin the lands that are already cleared, and either cut down more wood, if we have it, or emigrate into the Western country. I have endeavoured, both in a public and private character, to encourage the establishment of boards of agriculture in this country, but hitherto in vain; and what is still more extraordinary, and scarcely to be believed, I have endeavoured ineffectually to discard the pernicious practice just mentioned from my own estate; but, in my absence, pretexts of one kind or another have always been paramount to orders. Since the first establishment of the National Board of Agriculture in Great Britain, I have considered it as one of the most valuable institutions of modern times; and, conducted with so much ability and zeal, as it appears to be under the auspices of Sir John Sinclair, it must be productive of great advantages to the nation, and to mankind in general.

My system of agriculture is what you have described, and I am persuaded, were I to proceed on a large scale, would be improved by the alteration you have proposed. At the same time I must observe, that I have not found oats so great an exhauster, as they are represented to be; but in my system they follow wheat too closely to be proper, and the rotation will undergo a change in this, and perhaps in some other respects.

The vetches of Europe have not succeeded with me; our frosts in winter, and droughts in summer, are too severe for them. How far the mountain or wild pea would answer as a substitute, by cultivation, is difficult to decide, because I believe no trial has been made of it, and because its spontaneous growth is in rich lands only. That it is nutritious in a great degree, in its wild state, admits of no doubt.

Spring barley, such as we grow in this country, has thriven no better with me than vetches. The result of an experiment, made with a little of the true sort, will be interesting. The field peas of Eng-

land (different kinds) I have more than once tried, but not with encouragement to proceed; for, among other discouragements, they are perforated by a bug, which eats out the kernel. From the cultivation of the common black-eye peas, I have more hope, and am trying them this year, both as a crop, and for ploughing in as a manure; but the severe drought, under which we labor at present, may render the experiment inconclusive. It has, in a manner, destroyed my oats, and threatens to destroy my Indian corn.

The practice of ploughing in buckwheat twice in the season as a fertilizer is not new to me. It is what I have practised, or, I ought rather to have said, attempted to practise, the last two or three years; but, like most things else in my absence, it has been so badly executed, that is, the turning in of the plants has been so ill timed, as to give no result. I am not discouraged, however, by these failures; for, if pulverizing the soil, by fallowing and turning in vegetable substances for manure, is a proper preparation for the crop that is to follow, there can be no question, that a double portion of the latter, without an increase of the ploughing, must be highly beneficial. I am in the act of making another experiment of this sort, and shall myself attend to the operation, which, however, may again prove abortive, from the cause I have mentioned, namely, the drought.

The lightness of our oats is attributed, more than it ought to be, to the unfitness of the climate of the middle States. That this may be the case in part, and nearer the seaboard in a greater degree, I will not controvert; but it is a well-known fact, that no country produces better oats than those that grow on the Allegany Mountains, immediately westward of us. I have heard it affirmed, that they weigh upwards of fifty pounds the Winchester bushel. This may be occasioned by the fertility of the soil, and the attraction of moisture by the mountains; but another reason, and a powerful one too, may be assigned for the inferiority of ours, namely, that we are not choice in our seeds, and do not change them as we ought.

The seeds you were so obliging as to give me shared the same fate that Colonel Wadsworth's did, and as I believe seeds from England generally will do, if they are put into the hold of the vessel. For this reason, I always made it a point whilst I was in the habit of importing seeds, to request my merchants and the masters of vessels, by which they were sent, to keep them from the heat thereof.

You make a distinction, and no doubt a just one, between what in England is called barley, and big, or bere. If there be none of the true barley in this country, it is not for us, without experience, to pronounce upon the growth of it; and therefore, as noticed in a former part of this letter, it might be interesting to ascertain, whether our

climate and soil would produce it to advantage. No doubt, as your observations while you were in the United States appear to have been extensive and accurate, it did not escape you, that both winter and spring barley are cultivated among us. The latter is considered as an uncertain crop south of New York, and I have found it so on my farms. Of the former I have not made sufficient trial to hazard an opinion of success. About Philadelphia it succeeds well.

The Eastern Shore bean, as it is denominated here, has obtained a higher reputation than it deserves; and, like most things unnaturally puffed, sinks into disrepute. Ten or more years ago, led away by exaggerated accounts of its fertilizing quality, I was induced to give a very high price for some of the seed; and, attending to the growth in all its stages, I found that my own fields, which had been uncultivated for two or three years, abounded with the same plants, without perceiving any of those advantages, which had been attributed to them.

I am not surprised that our mode of fencing should be disgusting to a European eye. Happy would it have been for us, if it had appeared so in our own eyes; for no sort of fencing is more expensive or wasteful of timber. I have been endeavouring for years to substitute live fences in place of them; but my long absence from home has in this, as in everything else, frustrated all my plans, that required time and particular attention to effect them. I shall now, although it is too late in the day for me to see the result, begin in good earnest to ditch and hedge; the latter I am attempting with various things, but believe none will be found better than cedar, although I have several kinds of white thorn growing spontaneously on my own grounds.

Rollers I have been in the constant use of for many years, in the way you mention, and find considerable benefit in passing them over my winter grain in the spring, as soon as the ground will admit a hoof on it. I use them also on spring grain and grass seeds, after sowing and sometimes before, to reduce the clods when the ground is rough. My clover generally is sown with spring grain; but, where the ground is not too stiff and binding, it succeeds very well on wheat. Sown on a light snow in February, or the beginning of March, it sinks with the snow and takes good root. And orchard grass, of all others, is in my opinion the best mixture with clover; it blooms precisely at the same time, rises quick again after cutting, stands thick, yields well, and both horses and cattle are fond of it, green or in hay. Alone, unless it is sown very thick, it is apt to form tussocks. If of this, or any other seeds I can procure, you should be in want, I shall have great pleasure in furnishing them.

* * * *

For the detailed account of your observations on the husbandry of these United States, and your reflections thereon, I feel myself much obliged, and shall at all times be thankful for any suggestions on agricultural subjects, which you may find leisure and inclination to favor me with, as the remainder of my life, which in the common course of things, now in my sixty-sixth year, cannot be of long continuance, will be devoted wholly to rural and agricultural pursuits.

For the trouble you took in going to Hull, to see if any of the emigrants, who were on the point of sailing from thence to America, would answer my purposes as tenants; and for your very kind and friendly offer of rendering me services, I pray you to accept my sincere thanks, and an assurance of the esteem and regard with which I am, Sir, &c.

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Jefferson and Agriculture

MONTICELLO THE HOME OF JEFFERSON





INTRODUCTORY NOTE

Jefferson's life was largely spent in the political service of the Nation which he did so much to help create and whose future course of development he did so much to chart. Often referred to as the apostle of democracy, his political principles have become interwoven with the consciousness of the American multitude. More clearly than any of his contemporaries he comprehended the forces that were moulding the American political and social structure. Consciously he assumed the leadership of these forces, and as a result America became a democracy. Furthermore, it has remained so, largely because of his eminent leadership. Thus, his personality permeated that of his own country and ultimately extended its influence to many other lands.

Jefferson was born on the frontier of colonial Virginia, and the democracy he enunciated was in essence the product of the type of society that gave him life and nurtured him during his formative years. It was on the frontier that age-old traditions, class distinctions, and family prestige -- the complexes that differentiate the traditional European civilization from the American -- disintegrated and disappeared, and it was to their uprooting and destruction that Jefferson dedicated his life. The study and thinking of his mature years merely resulted in a rationalization of the heritage from his frontier past. The frontier was agricultural and therefore eminently practical. Likewise is Jefferson's philosophy practical, and its roots, like his, were embedded in an agricultural background.

Shortly before his death, Jefferson designated the Declaration of Independence, the Virginia Statute of Religious Freedom, and the founding of the University of Virginia as the chief contributions of his life. In retrospect it is apparent that Jefferson's judgment of his own services was as unerring as had been his vision of his country's life. The first had provided a creed for democracy. The second was a milestone in the age-long struggle to separate civil governments from religious domination or influence. In one succinct sentence, he disposed of the divergent contentions of centuries. "The opinions of men are not the object of civil government, nor under its jurisdiction." Thus, toleration for minority opinions, religious or otherwise, gained a final triumph. Third, but not least, Jefferson realized that if democracy was to survive it must be an intelligent democracy. He therefore did all within his power to further the cause of general education in America. His projected curriculum for education embraced all branches of human knowledge. The sovereignty of human reason was to be enthroned, and all things were to be subjected to investigation and skeptical analysis before acceptance.

In addition to leadership in the achievement of democracy, Jefferson made other notable contributions to the framework of the American empire. In the critical period following the recognition of American independence, the question of how the new Nation was to govern its public domain arose. Jefferson was chairman of the committee selected to draft a plan of government for this domain. His report was adopted, with changes, as the Ordinance of 1784. It embraced the general principle that the regions west of the Alleghenies were to have restricted rights of self-government during sparse settlement and were ultimately to be admitted to the Union on terms of equality with the Thirteen Original States. Thus, the problem of empire which had shaken and ultimately broken the British Empire in the years immediately following 1763 was on its way toward solution. The Ordinance of 1784 was an instinctive forecast of future development.

Jefferson served as chairman of the committee that outlined the general principles of American land policy in the Ordinance of 1785. The draft of the committee report in 1784 is in his handwriting, but he retired from the chairmanship and went to Europe to serve as minister to France before the Ordinance was adopted by Congress in 1785. The Ordinance embodied the fundamentals of the American land system which, with modifications dictated by experience, has proved to be permanently workable.

It was Jefferson who grasped the significance of possible American acquisition of the vast territory to the west of the Mississippi River, then known in a general way as Louisiana, and initiated the steps that resulted in its purchase from Napoleon. As an immediate result the pioneers of Tennessee, Kentucky, and Ohio gained a free outlet for their products by way of the Mississippi to the sea. Most important was the acquisition of the vast imperial domain stretching from the great interior valley of America westward to the Pacific as a region where thousands of American farm homes could be developed in the future.

The interests of Jefferson were not limited to political leadership and statesmanship. His curiosity about men and things was omnivorous and insatiable, and his writings indicate that he was abreast of the latest developments in practically every field of knowledge. Possessed of the scientific spirit, he made contributions to the fields of geography, botany, paleontology, ethnology, and natural history, and his interest in mechanics resulted in his inventing numerous ingenious as well as practical appliances.

Jefferson was a practitioner as well as a patron of the arts. Perhaps most noteworthy in this field is his work as an architect.

His design for the State House at Richmond set the architectural pattern for public buildings in America for over a century. His beloved Monticello and the famous quadrangle at the University of Virginia are likewise notable contributions to American architecture.

Reference has already been made to the agricultural antecedents of Jefferson's genius. As a farmer he sought to make Monticello and his other landholdings profitable as well as self-sufficient. This fact, together with his scientific inclinations, resulted in Monticello's becoming a progressive experimental farm where new machinery, new methods, and new crops were tried out. Over a long period he grew as many as thirty-two different vegetables at Monticello, and he attempted to adapt, domesticate, or acclimatize literally scores of plants, shrubs, and trees. In some cases he succeeded; in others, he failed.

Jefferson also applied his scientific knowledge and ability to the problems of improving farm machinery. In this field of activity, his chief contribution was a design for an all-metal plow with a mould board that turned the soil effectively. Shaped according to mathematical computations, the mould board had the least possible resistance. Unfortunately the smiths who made the plows of those days did not follow Jefferson's specifications. Jefferson also developed other farm devices, including a seed drill, a hemp brake, and improvements on a threshing machine. No less than three hundred and twenty-five of the extant personal letters to friends and acquaintances deal primarily with agricultural matters, and these, together with his "Farm Book" and "Garden Book" afford ample testimony of his eminence as a statesman in the field of agriculture.

To Jefferson, agriculture was more than an occupation; it was a way of life. In his belief, it developed social virtues that were peculiar to tillers of the soil -- virtues that were basic in the life of any great nation. Agriculture was the basis of his philosophy and the source of his strength. - Everett E. Edwards.

EXCERPTS FROM JEFFERSON'S "FARM BOOK"

Jefferson kept a "Farm Book" in his own handwriting which gives fragmentary but interesting sidelights on his farming activities. The original volume is in the Massachusetts Historical Society at Boston, and the United States Department of Agriculture Library has a photostat copy. Whenever Jefferson observed or learned something about farming which he considered worth remembering, he recorded it under an appropriate heading in a section of his handbook which he called "Aphorisms, Observations, Facts in Husbandry." The following are examples taken from pages 82 and 87.

DUNG

Folding. Mr Taylor says he knows by accurate & constant experience that 40. head of cattle, folded of nights only, dung completely 20. yds square.

before folding the ground should be coultured & covered with straw, then folded one week, and the straw & dung immediately turned in with the great plough.

an Experiment to be tried. lay off a square acre & put 25 loads [yds] of dung on it. lay off 8 acres separately around it: fold 4 of them with a given number of cattle, & the other 4. with 5. or 6 times as many sheep, giving 1. week to one acre, $1\frac{1}{2}$ to the 2^d. 2 weeks to the 3^d. & $2\frac{1}{2}$ to the 4th. sow the whole with wheat, and see which of the folded acres is equal to the dunged one, in order to ascertain the equivalence between folding & spreading dung.

* * * *

Dung hill should be on a level, paved, with a well round it, shaded, channels at bottom to lead off superfluous moisture. . . .

Young sais that 20. head of sheep will fold 1. acre a year in a manner to equal 20. loads of dung. then the folding of one sheep a year is equivalent to one load of dung. 3. exp. yr. 166. This makes 20 sheep only equal to 1. cow. Mr

Taylor's estimate in folding makes 1. cow fold 7/10 of an acre in a year. This makes 1. cow equal to 18. sheep.

Rotted dung. cattle, little & big, will make 10 loads [cubic yds] in 6. months if well littered. Logan. D. M. Randolph.

25. such loads serve to manure an acre. Logan.

it would be well worth while to confine & litter cattle in a yard thro' the summer.- Logan.

each head would then manure an acre a year.

dung is carried on in Dec. Jan. Feb.

Marle -- an easy method of estimating accurately the quantity of calcareous earth they contain by dropping spirit of nitre till saturated, on that & on unburnt limestone. . . .

Gypsum a calcareous earth combined with a mineral acid. when the calcareous earth is predominant it is a good manure, when the 2. ingredients are balanced so as to neutralise it perfectly it is neither good nor bad. when the acid abounds it is injurious. . . .

POTATOES

planted alone in drills 5.f. apart, take 8. bushels of seed to the acre, if cut into eyes.

The unrotted dung of the last winter may be carried out in Mar. Apr. or May, & the potatoe furrow being made, & potatoes dropped in. This dung is then put over them, trodden in, & covered with a thin coat of earth. Mr Taylor thinks this much the most oeconomical way of using dung. it becomes well rotted & in a proper state for the succeeding crop of grain.

1795. Dec. Colo. N. Lewis', this year in drills 4 f. apart yielded 5 bush. to 140 yds. in the row = 130 bush. for a acre. he says a hand will dig $\frac{1}{3}$ of an acre per day, say 43. bushels per day.

Young finds the planting at a foot apart all over the ground produce most & prepare the ground best for wheat. 3. Exp. yr. 260.

mixed with corn.

one way is to drill the corn in 8.f. rows, & 18.I. apart in the row; then to drill the potatoes between. with good ploughing this is the best method. G. Washington.

this method takes about 5. bushels of seed to the acre, if cut into eyes.

Peters has tried this method many years, & measuring the produce of several acres it has been 40. bush. of corn & 120. bush. of potatoes to the acre.

June is the best time for planting potatoes, by which time the corn may have been worked over 3 times. per Parker.

another way is to plant the corn & potatoes in 4.f. rows both ways, every other row being potatoes. This takes 2. or $2\frac{1}{2}$ bush. of seed to the acre, &, with bad ploughmen, is the best, because of crop ploughing.

to feed with potatoes, they are put into a trough with some water, and stirred about with a switch broom, then put into a dry trough & chopped with an S, the blade of which is $7\frac{1}{2}$ I long, 3 I. deep, & has a socket to receive the handle which is as long as a spade handle.

a double measure of potatoes yield as much nutriment as a single one of corn. Logan.

a peck of potatoes a day serves a horse. a handful of bran, or rye meal &c is mixed in for them.

a bushel a day serves a fattening ox.

EXCERPTS FROM JEFFERSON'S "GARDEN BOOK"

Jefferson also kept a "Garden Book," the original of which is also in the Massachusetts Historical Society at Boston. The United States Department of Agriculture Library has a photostat copy.

The following excerpt concerning the planting of a grapery on April 6, 1809 is from pages 15-17.

Planted 30. [grape] vines just below where the new garden wall will run, towards the Westernmost end. S of them at the Westernmost end of the row were Spanish Raisins from Colo Bland's, next to them were 16. native vines from Winslow's in New Kent, and at the Easternmost end were 6. native vines of Monticello. They were planted by some Tuscan Vignerons who came over with Mr Mazzie. The manner was as follows.

A trench 4.f. deep and 4.f. wide was dug. at the bottom were put small green bushes, and on them a thin coat of dung and earth mixed, which raised the bed to within $2\frac{1}{2}$ feet of the surface. The cuttings which were from $3\frac{1}{2}$ to 6.f. long, and which had been hitherto buried in the earth, were then produced, about 18.I. of their butts were dipt into a thick paste made of cowdung and water and then planted in the bottom, the Raisins 3.f. apart. The rest about 2.f. having a stick stuck by each to which it was bound with bear grass in order to support it while the earth should be drawn in. The earth was then thrown in, the mould first, and afterwards the other earth in the same order in which it was dug. leaving the bottom clay for the last. The earth was thrown in very loose & care was taken to avoid trampling in it. The trench was not quite filled, but left somewhat hollowing to receive & retain the water, & the superfluous earth was left on each side without the trench. Then the supporting sticks were drawn out and would have served for the other rows had the plantation been to be continued in such a case. The rows are to be 4 f. apart, so that in fact the whole surface is taken up to the depth of 4.f. The best way of doing it is to dig every other trench, and leave the earth which is thrown out exposed for a twelvemonth. Then the vines may be planted at any time from the middle of November to the first week in April. afterwards dig the other alternate trenches, and leave the earth of these also exposed for a twelvemonth. when the latter trenches are planted, leave the superfluous earth in ridges between the rows till by the subsidence of the earth it becomes necessary to pull it into the trenches. if any of your grapes turn out illy, cut off the vine & ingraft another on the stock. an acre in vines where they are $2\frac{1}{2}$ f apart in the row will admit 4316. in all.

EXCERPTS FROM JEFFERSON'S NOTES ON VIRGINIA

Jefferson's Notes on Virginia (1785) has been described as "the first comprehensive treatise upon the topography, Natural History and natural resources of one of the United States, and was the precursor of the great library of scientific reports which have since been issued by the State and Federal governments." It includes one of the frequently quoted passages from Jefferson on the place of agriculture in the life of the nation

The political economists of Europe have established it as a principle, that every State should endeavor to manufacture for itself; and this principle, like many others, we transfer to America, without calculating the difference of circumstance which should often produce a difference of result. In Europe the lands are either cultivated, or locked up against the cultivator. Manufacture must therefore be resorted to of necessity not of choice, to support the surplus of their people. But we have an immensity of land courting the industry of the husbandman. Is it best then that all our citizens should be employed in its improvement, or that one half should be called off from that to exercise manufactures and handicraft arts for the other? Those who labor in the earth are the chosen people of God, if ever He had a chosen people, whose breasts He has made His peculiar deposit for substantial and genuine virtue. It is the focus in which He keeps alive that sacred fire, which otherwise might escape from the face of the earth. Corruption of morals in the mass of cultivators is a phenomenon of which no age nor nation has furnished an example. It is the mark set on those, who, not looking up to heaven, to their own soil and industry, as does the husbandman, for their subsistence, depend for it on casualties and caprice of customers. Dependence begets subservience and venality, suffocates the germ of virtue, and prepares fit tools for the designs of ambition. This, the natural progress and consequence of the arts, has sometimes perhaps been retarded by accidental circumstances; but, generally speaking, the proportion which the aggregate of the other classes of citizens bears in any State to that of its husbandmen, is the proportion of its unsound to its healthy parts, and is a good enough barometer whereby to measure its degree of corruption. - H. A. Washington, ed., The Writings of Thomas Jefferson, 8:405 (Washington, D. C., Taylor & Maury, 1854).

JEFFERSON TO JOHN JAY, FROM PARIS, AUGUST 23, 1785

The following letter contains one of Jefferson's famous statements about the place of agriculture in the life of the Nation.

.... The present [letter] ... is occasioned by the question proposed in yours of June the 14th; "whether it would be useful to us, to carry all our own productions, or none?"

Were we perfectly free to decide this question, I should reason as follows. We have now lands enough to employ an infinite number of people in their cultivation. Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous, and they are tied to their country, and wedded to its liberty and interests, by the most lasting bonds. As long, therefore, as they can find employment in this line, I would not convert them into mariners, artisans, or anything else. But our citizens will find employment in this line, till their numbers, and of course their productions, become too great for the demand, both internal and foreign. This is not the case as yet, and probably will not be for a considerable time. As soon as it is, the surplus of hands must be turned to something else. I should then, perhaps, wish to turn them to the sea in preference to manufactures; because, comparing the characters of the two classes, I find the former the most valuable citizens....

But what will be the consequence? Frequent wars without a doubt. Their property will be violated on the sea, and in foreign ports, their persons will be insulted, imprisoned, &c., for pretended debts, contracts, crimes, contraband, &c., &c. These insults must be resented, even if we had no feelings, yet to prevent their eternal repetition; or in other words, our commerce on the ocean and in other countries, must be paid for by frequent war.... I hope our land office will rid us of our debts, and that our first attention then, will be, to the beginning a naval force of some sort. This alone can countenance our people as carriers on the water, and I suppose them to be determined to continue such.... - H. A. Washington, ed., The Writings of Thomas Jefferson, 1:403-405 (Washington, D. C., Taylor & Maury, 1853).

JEFFERSON TO JOHN PAGE, FROM PARIS, MAY 4, 1786

Jefferson traveled widely, and wherever he went, he had a keen interest in farming conditions and methods. The following letter records certain of his observations on English agriculture

* * * *

I returned but three or four days ago from a two months' trip to England. I traversed that country much, and own both town and country fell short of my expectations. Comparing it with this, I found a much greater proportion of barrens, a soil, in other parts, not naturally so good as this, not better cultivated, but better manured, and, therefore, more productive. This proceeds from the practice of long leases there, and short ones here. The laboring people here are poorer than in England. They pay about one half their produce in rent; the English, in general, about a third. The gardening, in that country, is the article in which it surpasses all the earth. I mean their pleasure gardening. This, indeed, went far beyond my ideas. The city of London, though handsomer than Paris, is not so handsome as Philadelphia. Their architecture is in the most wretched style I ever saw, not meaning to except America, where it is bad, nor even Virginia, where it is worse than in any other part of America which I have seen.... In the arts, the most striking thing I saw there, new, was the application of the principle of the steam-engine to grist mills. I saw eight pair of stones which are worked by steam, and there are to be set up thirty pair in the same house. A hundred bushels of coal a day, are consumed at present. I do not know in what proportion the consumption will be increased by the additional geer.... - H. A. Washington, ed., The Writings of Thomas Jefferson, 1:548-551 (Washington, D. C., Taylor & Maury, 1853).

JEFFERSON TO JEAN PIERRE BRISSOT DE WARVILLE, FROM PARIS,
AUGUST 15, 1786

Jefferson's view of the place of agriculture is
expressed in the following letter.

.... I have read with very great satisfaction the sheets of your work on the commerce of France and the United States, which you were so good as to put in my hands. I think you treat the subject, as far as these sheets go, in an excellent manner. Were I to select any particular passages as giving me particular satisfaction, it would be those wherein you prove to the United States that they will be more virtuous, more free, and more happy, employed in agriculture, than as carriers or manufacturers. It is a truth, and a precious one for them, if they could be persuaded of it. - H. A. Washington, ed., The Writings of Thomas Jefferson, 2:11-13 (Washington, D. C., Taylor & Maury, 1853).

JEFFERSON TO LAFAYETTE, FROM NICE, APRIL 11, 1787

The following letter records Jefferson's observations on agriculture
in France on the eve of the French Revolution.

.... I am constantly roving about, to see what I have never seen before, and shall never see again. In the great cities, I go to see what travellers think alone worthy of being seen; but I make a job of it, and generally gulp it all down in a day. On the other hand, I am never satiated with rambling through the fields and farms, examining the culture and cultivators, with a degree of curiosity which makes some take me to be a fool, and others to be much wiser than I am. I have been pleased to find among the people a less degree of physical misery than I had expected. They are generally well clothed, and have a plenty of food, not animal indeed, but vegetable, which is as wholesome. Perhaps they are over-worked, the excess of the rent required by the landlord obliging them to too many hours of labor in order to produce that, and wherewith to feed and clothe themselves. The soil of Champagne and Burgundy I have found more universally good than I had expected, and as I could not help making a comparison with England, I found that comparison more unfavorable to the latter than

is generally admitted. The soil, the climate, and the productions are superior to those of England, and the husbandry as good, except in one point; that of manure. In England, long leases for twenty-one years, or three lives, to wit, that of the farmer, his wife, and son, renewed by the son as soon as he comes to the possession, for his own life, his wife's and eldest child's, and so on, render the farms there almost hereditary, make it worth the farmer's while to manure the lands highly, and give the landlord an opportunity of occasionally making his rent keep pace with the improved state of the lands. Here the leases are either during pleasure, or for three, six, or nine years, which does not give the farmer time to repay himself for the expensive operation of well manuring, and, therefore, he manures ill, or not at all. I suppose, that could the practice of leasing for three lives be introduced in the whole kingdom, it would, within the term of your life, increase agricultural productions fifty per cent.; or were any one proprietor to do it with his own lands, it would increase his rents fifty per cent, in the course of twenty-five years. But I am told the laws do not permit it. The laws then, in this particular, are unwise and unjust, and ought to give that permission. In the southern provinces, where the soil is poor, the climate hot and dry, and there are few animals, they would learn the art, found so precious in England, of making vegetable manure, and thus improving these provinces in the article in which nature has been least kind to them. Indeed, these provinces afford a singular spectacle. Calculating on the poverty of their soil, and their climate by its latitude only, they should have been the poorest in France. On the contrary, they are the richest, from one fortuitous circumstance. Spurs or ramifications of high mountains, making down from the Alps, and, as it were, reticulating these provinces, give to the valleys the protection of a particular inclosure to each, and the benefit of a general stagnation of the northern winds produced by the whole of them, and thus counter-vail the advantage of several degrees of latitude. From the first olive fields of Pierrelatte, to the orangeries of Hieres, has been continued rapture to me. . . .

You will not wonder at the subjects of my letters; they are the only ones which have been presented to my mind for some time past; and the waters must always be what are the fountains from which they flow - H. A. Washington, ed., The Writings of Thomas Jefferson, 2:134-137 (Washington, D. C., Taylor & Maury, 1853).

JEFFERSON TO WILLIAM DRAYTON, FROM PARIS, JULY 30, 1787

Jefferson believed that "the greatest service which can be rendered any country is to add an useful plant to its culture." He was a pioneer in the work of introducing foreign plants into the United States. The following letter gives special attention to upland rice and olives.

Sir,--Having observed that the consumption of rice in this country, and particularly in this capital, was very great, I thought it my duty to inform myself from what markets they draw their supplies, in what proportion from ours, and whether it might not be practicable to increase that proportion. This city being little concerned in foreign commerce, it is difficult to obtain information on particular branches of it in the detail. I addressed myself to the retailers of rice, and from them received a mixture of truth and error, which I was unable to sift apart in the first moment. Continuing, however, my inquiries, they produced at length this result: that the dealers here were in the habit of selling two qualities of rice, that of Carolina, with which they were supplied chiefly from England, and that of Piedmont; that the Carolina rice was long, slender, white and transparent, answers well when prepared with milk, sugar, &c., but not so well when prepared au gras; that that of Piedmont was shorter, thicker, and less white, but that it presented its form better when dressed au gras, was better tasted, and therefore preferred by good judges for those purposes; that the consumption of rice, in this form, was much the most considerable, but that the superior beauty of the Carolina rice, seducing the eye of those purchasers who are attached to appearances, the demand for it was upon the whole as great as for that of Piedmont. They supposed this difference of quality to proceed from a difference of management; that the Carolina rice was husked with an instrument that broke it more, and that less pains were taken to separate the broken from the unbroken grains, imagining that it was the broken grains which dissolved in oily preparations; that the Carolina rice costs somewhat less than that of Piedmont; but that being obliged to sort the whole grains from the broken, in order to satisfy the taste of their customers, they ask and receive as much for the first quality of Carolina, when sorted, as for the rice of Piedmont; but the second and third qualities, obtained by sorting, are sold much cheaper. The objection to the Carolina rice then, being, that it crumbles in certain forms of preparation, and this supposed to be the effect of a less perfect machine for husking, I flattered myself I should be able to learn what might be the machine of Piedmont, when I should arrive at Marseilles, to which place I was to

go in the course of a tour through the seaport towns of this country. At Marseilles, however, they differed as much in account of the machines, as at Paris they had differed about other circumstances. Some said it was husked between mill-stones, others between rubbers of wood in the form of mill-stones, others of cork. They concurred in one fact, however, that the machine might be seen by me, immediately on crossing the Alps. This would be an affair of three weeks. I crossed them and went through the rice country from Vercelli to Pavia, about sixty miles. I found the machine to be absolutely the same with that used in Carolina, as well as I could recollect a description which Mr. E. Rutledge had given me of it. It is on the plan of a powder mill. In some of them, indeed, they arm each pestle with an iron tooth, consisting of nine spikes hooked together, which I do not remember in the description of Mr. Rutledge. I therefore had a tooth made, which I have the honor of forwarding you with this letter; observing, at the same time, that as many of their machines are without teeth as with them, and of course, that the advantage is not very palpable. It seems to follow, then, that the rice of Lombardy (for though called Piedmont rice, it does not grow in that county but in Lombardy) is of a different species from that of Carolina; different in form, in color and in quality. We know that in Asia they have several distinct species of this grain. Monsieur Poivre, a former Governor of the Isle of France, in travelling through several countries of Asia, observed with particular attention the objects of their agriculture, and he tells us, that in Cochin-China they cultivate six several kinds of rice, which he describes, three of them requiring water, and three growing on highlands. The rice of Carolina is said to have come from Madagascar, and De Poivre tells us, it is the white rice which is cultivated there. This favors the probability of its being of a different species originally, from that of Piedmont; and time, culture and climate may have made it still more different. Under this idea, I thought it would be well to furnish you with some of the Piedmont rice, unhusked, but was told it was contrary to the laws to export it in that form. I took such measures as I could, however, to have a quantity brought out, and lest these should fail, I brought, myself, a few pounds. A part of this I have addressed to you by the way of London; a part comes with this letter; and I shall send another parcel by some other conveyance, to prevent the danger of miscarriage. Any one of them arriving safe, may serve to put in seed, should the society think it an object. This seed too, coming from Vercelli, where the best rice is supposed to grow, is more to be depended on than what may be sent me hereafter. There is a rice from the Levant, which is considered as of a quality still different, and some think it superior to that of Piedmont. The troubles which have existed in that country for several years back, have intercepted it from the European market, so that it is become almost unknown. I procured a

bag of it, however, at Marseilles, and another of the best rice of Lombardy, which are on their way to this place, and when arrived, I will forward you a quantity of each, sufficient to enable you to judge of their qualities when prepared for the table. I have also taken measures to have a quantity of it brought from the Levant, unhusked. If I succeed, it shall be forwarded in like manner. I should think it certainly advantageous to cultivate, in Carolina and Georgia, the two qualities demanded at market; because the progress of culture, with us, may soon get beyond the demand for the white rice; and because too, there is often a brisk demand for the one quality, when the market is glutted with the other. I should hope there would be no danger of losing the species of white rice, by a confusion with the other. This would be a real misfortune, as I should not hesitate to pronounce the white, upon the whole, the most precious of the two, for us.

The dry rice of Cochin-China has the reputation of being the whitest to the eye, best flavored to the taste, and most productive. It seems then to unite the good qualities of both the others known to us. Could it supplant them, it would be a great happiness, as it would enable us to get rid of those ponds of stagnant water, so fatal to human health and life. But such is the force of habit, and caprice of taste, that we could not be sure beforehand it would produce this effect. The experiment, however, is worth trying, should it only end in producing a third quality, and increasing the demand. I will endeavor to procure some to be brought from Cochin-China. The event, however, will be uncertain and distant.

I was induced, in the course of my journey through the south of France, to pay very particular attention to the objects of their culture, because the resemblance of their climate to that of the southern parts of the United States, authorizes us to presume we may adopt any of their articles of culture, which we would wish for. We should not wish for their wines, though they are good and abundant. The culture of the vine is not desirable in lands capable of producing anything else. It is a species of gambling, and of desperate gambling too, wherein, whether you make much or nothing, you are equally ruined. The middling crop alone is the saving point, and that the seasons seldom hit. Accordingly, we see much wretchedness among this class of cultivators. Wine, too, is so cheap in these countries, that a laborer with us, employed in the culture of any other article, may exchange it for wine, more and better than he could raise himself. It is a resource for a country, the whole of whose good soil is otherwise employed, and which still has some barren spots, and surplus of population to employ on them. There the vine is good, because it is something in the place of nothing. It may become a resource to us at a still earlier period; when the increase of population shall increase

our productions beyond the demand for them, both at home and abroad. Instead of going on to make an useless surplus of them, we may employ our supernumerary hands on the vine. But that period is not yet arrived.

The almond tree is also so precarious, that none can depend for subsistence on its produce, but persons of capital.

The caper, though a more tender plant, is more certain in its produce, because a mound of earth of the size of a cucumber hill, thrown over the plant in the fall, protects it effectually against the cold of winter. When the danger of frost is over in the spring, they uncover it, and begin its culture. There is a great deal of this in the neighborhood of Toulon. The plants are set about eight feet apart, and yield, one year with another, about two pounds of caper each, worth on the spot sixpence sterling per pound. They require little culture, and this may be performed either with the plough or hoe. The principal work is the gathering of the fruit as it forms. Every plant must be picked every other day, from the last of June till the middle of October. But this is the work of women and children. This plant does well in any kind of soil which is dry, or even in walls where there is no soil, and it lasts the life of a man. Toulon would be the proper port to apply for them. I must observe, that the preceding details cannot be relied on with the fullest certainty, because, in the canton where this plant is cultivated, the inhabitants speak no written language, but a medley, which I could understand but very imperfectly.

The fig and mulberry are so well known in America, that nothing need be said of them. Their culture, too, is by women and children, and therefore earnestly to be desired in countries where there are slaves. In these, the women and children are often employed in labors disproportioned to their sex and age. By presenting to the master objects of culture, easier and equally beneficial, all temptation to misemploy them would be removed, and the lot of this tender part of our species be much softened. By varying, too, the articles of culture, we multiply the chances for making something, and disarm the seasons in a proportionable degree, of their calamitous effects.

The olive is a tree the least known in America, and yet the most worthy of being known. Of all the gifts of heaven to man, it is next to the most precious, if it be not the most precious. Perhaps it may claim a preference even to bread, because there is such an infinitude of vegetables, which it renders a proper and comfortable nourishment. In passing the Alps at the Col de Tende, where they are mere masses of rock, wherever there happens to be a little soil, there are a number of olive trees, and a village supported by them. Take

away these trees, and the same ground in corn would not support a single family. A pound of oil, which can be bought for three or four pence sterling, is equivalent to many pounds of flesh, by the quantity of vegetables it will prepare, and render fit and comfortable food. Without this tree, the country of Provence and territory of Genoa would not support one-half, perhaps not one-third, their present inhabitants. The nature of the soil is of little consequence if it be dry. The trees are planted from fifteen to twenty feet apart, and when tolerably good, will yield fifteen or twenty pounds of oil yearly, one with another. There are trees which yield much more. They begin to render good crops at twenty years old, and last till killed by cold, which happens at some time or other, even in their best positions in France. But they put out again from their roots. In Italy, I am told, they have trees two hundred years old. They afford an easy but constant employment through the year, and require so little nourishment, that if the soil be fit for any other production, it may be cultivated among the olive trees without injuring them. The northern limits of this tree are the mountains of the Cevennes, from about the meridian of Carcassonne to the Rhone, and from thence, the Alps and Apennines as far as Genoa, I know, and how much farther I am not informed. The shelter of these mountains may be considered as equivalent to a degree and a-half of latitude, at least, because westward of the commencement of the Cevennes, there are no olive trees in $43\frac{1}{2}^{\circ}$ or even 43° of latitude, whereas, we find them now on the Rhone at Pierrelatte, in $44\frac{1}{2}^{\circ}$, and formerly they were at Tains, above the mouth of the Isere, in 45° , sheltered by the near approach of the Cevennes and Alps, which only leave there a passage for the Rhone. Whether such a shelter exists or not in the States of South Carolina and Georgia, I know not. But this we may say, either that it exists or that it is not necessary there, because we know that they produce the orange in open air; and wherever the orange will stand at all, experience shows that the olive will stand well, being a hardier tree. Notwithstanding the great quantities of oil made in France, they have not enough for their own consumption, and therefore import from other countries. This is an article, the consumption of which will always keep pace with its production. Raise it, and it begets its own demand. Little is carried to America, because Europe has it not to spare. We, therefore, have not learned the use of it. But cover the southern States with it, and every man will become a consumer of oil, within whose reach it can be brought in point of price. If the memory of those persons is held in great respect in South Carolina who introduced there the culture of rice, a plant which sows life and death with almost equal hand, what obligations would be due to him who should introduce the olive tree, and set the example of its culture! Were the owner of slaves to view it only as the means of bettering their condition, how much would he better that by planting one of those trees for every slave he possessed! Having been myself an eye witness to the

blessings which this tree sheds on the poor, I never had my wishes so kindled for the introduction of any article of new culture into our own country. South Carolina and Georgia appear to me to be the States, wherein its success, in favorable positions at least, could not be doubted, and I flattered myself it would come within the views of the society for agriculture to begin the experiments which are to prove its practicability. Carcassonne is the place from which the plants may be most certainly and cheaply obtained. They can be sent from thence by water to Bordeaux, where they may be embarked on vessels bound for Charleston. There is too little intercourse between Charleston and Marseilles to propose this as the port of exportation. I offer my services to the society for the obtaining and forwarding any number of plants which may be desired.

Before I quit the subject of climates, and the plants adapted to them, I will add, as a matter of curiosity, and of some utility too, that my journey through the southern parts of France, and the territory of Genoa, but still more the crossing of the Alps, enabled me to form a scale of the tenderer plants, and to arrange them according to their different powers of resisting cold. In passing the Alps at the Col de Tende, we cross three very high mountains successively. In ascending, we lose these plants, one after another, as we rise, and find them again in the contrary order as we descend on the other side; and this is repeated three times. Their order, proceeding from the tenderest to the hardiest, is as follows: caper, orange, palm, aloe, olive, pomegranate, walnut, fig, almond. But this must be understood of the plant only; for as to the fruit, the order is somewhat different. The caper, for example, is the tenderest plant, yet, being so easily protected, it is among the most certain in its fruit. The almond, the hardiest, loses its fruit the oftenest, on account of its forwardness. The palm, hardier than the caper and orange, never produces perfect fruit here.

I had the honor of sending you, the last year, some seeds of the sulla of Malta, or Spanish St. Foin. Lest they should have miscarried, I now pack with the rice a cannister of the same kind of seed, raised by myself. By Colonel Franks, in the month of February last, I sent a parcel of acorns of the cork oak, which I desired him to ask the favor of the Delegates of South Carolina in Congress to forward to you.

I have the honor to be, with sentiments of the most perfect esteem and respect, Sir, your most obedient, and most humble servant. -
H. A. Washington, ed., The Writings of Thomas Jefferson, 2:194-202 (Washington, D. C., Taylor & Maury, 1853).

JEFFERSON TO PRESIDENT WASHINGTON, FROM PHILADELPHIA,
JUNE 28, 1793

The following letter provides a survey of agriculture in
Virginia at the end of the eighteenth century.

Dear Sir,--I should have taken time ere this to have considered the observations of Mr. Young, could I at this place have done it in such a way as would satisfy either him or myself. When I wrote the notes of the last year, I had never before thought of calculating what were the profits of a capital invested in Virginia agriculture.... Mr. Young must not pronounce too hastily on the impossibility of an annual production of £750 worth of wheat coupled with a cattle product of £125. My object was to state the produce of a good farm, under good husbandry as practised in my part of the country. Manure does not enter into this, because we can buy an acre of new land cheaper than we can manure an old acre. Good husbandry with us consists in abandoning Indian corn and tobacco, tending small grain, some red clover, following, and endeavoring to have, while the lands are at rest, a spontaneous cover of white clover. I do not present this as a culture judicious in itself, but as good in comparison with what most people there pursue. Mr. Young has never had an opportunity of seeing how slowly the fertility of the original soil is exhausted. With moderate management of it, I can affirm that the James river lowgrounds with the cultivation of small grain, will never be exhausted; because we know that under that cultivation we must now and then take them down with Indian corn, or they become, as they were originally, too rich to bring wheat. The highlands, where I live, have been cultivated about sixty years. The culture was tobacco and Indian corn as long as they would bring enough to pay the labor. Then they were turned out. After four or five years rest they would bring good corn again, and in double that time perhaps good tobacco. Then they would be exhausted by a second series of tobacco and corn. Latterly we have begun to cultivate small grain; and excluding Indian corn, and following, such of them as were originally good, soon rise up to fifteen or twenty bushels the acre. We allow that every laborer will manage ten acres of wheat, except at harvest. I have no doubt but the coupling cattle and sheep with this would prodigiously improve the produce. This improvement Mr. Young will be better able to calculate than anybody else. I am so well satisfied of it myself, that having engaged a good farmer from the head of Elk, (the style of farming there you know well,) I mean in a farm of about 500 acres of cleared land and with a dozen laborers to try the plan of wheat, rye, potatoes, clover, with a mixture of some Indian corn with the potatoes, and to push the number of sheep. This last hint I have taken from

Mr. Young's letters which you have been so kind as to communicate to me. I have never before considered with due attention the profit from that animal. I shall not be able to put the farm into that form exactly the ensuing autumn, but against another I hope I shall, and I shall attend with precision to the measures of the ground and of the product, which may perhaps give you something hereafter to communicate to Mr. Young which may gratify him, but I will furnish the ensuing winter what was desired in Mr. Young's letter of Jan. 17, 1793. I have the honor to be, with great and sincere esteem, dear Sir, your most obedient humble servant. - H. A. Washington, ed., The Writings of Thomas Jefferson, 4:3-5 (Washington, D. C., Taylor & Maury, 1854).

JEFFERSON TO PRESIDENT WASHINGTON, FROM MONTICELLO, MAY 14, 1794

Jefferson worked out a crop rotation which he used to restore the lands at Monticello which had suffered from neglect under overseers during his long absences.

.... I find on a more minute examination of my lands than the short visits heretofore made to them permitted, that a ten years' abandonment of them to the ravages of overseers, has brought on them a degree of degradation far beyond what I had expected. As this obliges me to adopt a milder course of cropping, so I find that they have enabled me to do it, by having opened a great deal of lands during my absence. I have therefore determined on a division of my farm into six fields, to be put under this rotation: first year, wheat; second, corn, potatoes, peas; third, rye or wheat, according to circumstances; fourth and fifth, clover where the fields will bring it, and buckwheat dressings where they will not; sixth, folding, and buckwheat dressings. But it will take me from three to six years to get this plan underway. I am not yet satisfied that my acquisition of overseers from the head of Elk has been a happy one, or that much will be done this year towards rescuing my plantations from their wretched condition. Time, patience and perseverance must be the remedy; and the maxim of your letter, "slow and sure," is not less a good one in agriculture than in politics.... With every wish for your health and happiness, and my most friendly respects for Mrs. Washington, I have the honor to be, dear Sir, your most obedient, and most humble servant. - H. A. Washington, ed., The Writings of Thomas Jefferson, 4:105-107 (Washington, D. C., Taylor & Maury, 1854).

JEFFERSON TO PRESIDENT WASHINGTON, MONTICELLO, JUNE 19, 1796

Jefferson and Washington were both much interested in legumes as soil-restoring plants. The following excerpt tells something of Jefferson's experiences with them.

* * * *

I . . . talk to you of my peas and clover. As to the latter article, I have great encouragement from the friendly nature of our soil. I think I have had, both the last and present year, as good clover from common grounds, which had brought several crops of wheat and corn without ever having been manured, as I ever saw on the lots around Philadelphia. I verily believe that a yield of thirty-four acres, sowed on wheat April was twelvemonth, has given me a ton to the acre at its first cutting this spring. The stalks extended, measured three and a half feet long very commonly. Another field, a year older, and which yielded as well the last year, has sensibly fallen off this year. My exhausted fields bring a clover not high enough for hay, but I hope to make seed from it. Such as these, however, I shall hereafter put into peas in the broadcast, proposing that one of my sowings or wheat shall be after two years of clover, and the other after two years of peas. I am trying the white boiling pea of Europe (the Albany pea) this year, till I can get the hog pea of England, which is the most productive of all. But the true winter vetch is what we want extremely. I have tried this year the Carolina drill. It is absolutely perfect. Nothing can be more simple, nor perform its office more perfectly for a single row. I shall try to make one to sow four rows at a time of wheat or peas, at twelve inches distance. I have one of the Scotch threshing machines nearly finished. It is copied exactly from a model Mr. Pinckney sent me, only that I have put the whole works (except the horse wheel) into a single frame, movable from one field to another on the two axles of a wagon. It will be ready in time for the harvest which is coming on, which will give it a full trial. Our wheat and rye are generally fine, and the prices talked of bid fair to indemnify us for the poor crops of the two last years.

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H. A. Washington, ed., The Writings of Thomas Jefferson, 4:141-144 (Washington, D. C., Taylor & Maury, 1854).

JEFFERSON TO [correspondent's name lost], FROM PHILADELPHIA,
MARCH 23, 1798

Legumes and rotations are the main subjects
treated in this letter.

Dear Sir,--I have to acknowledge the receipt of your favors of August 16th and 18th, together with the box of seed accompanying the former, which has just come to hand. The letter of the 4th of June, which you mention to have committed to Mr. King, has never been received. It has most likely been intercepted on the sea, now become a field of lawless and indiscriminate rapine and violence. The first box which came through Mr. Donald, arrived safely the last year, but being a little too late for that season, its contents have been divided between Mr. Randolph and myself, and will be committed to the earth now immediately. The peas and the vetch are most acceptable indeed. Since you were here, I have tried that species of your field pea which is cultivated in New York, and begin to fear that that plant will scarcely bear our sun and soil. A late acquisition too of a species of our country pea, called the cow pea, has pretty well supplied the place in my husbandry which I had destined for the European field pea. It is very productive, excellent food for man and beast, awaits without loss our leisure for gathering, and shades the ground very closely through the hottest months of the year. This with the loosening of the soil, I take to be the chief means by which the pea improves the soil. We know that the sun in our cloudless climate is the most powerful destroyer of fertility in naked ground, and therefore that the perpetual fallows will not do here, which are so beneficial in a cloudy climate. Still I shall with care try all the several kinds of pea you have been so good as to send me, and having tried all hold fast that which is good. Mr. Randolph is peculiarly happy in having the barleys committed to him, as he had been desirous of going considerably into that culture. I was able at the same time to put into his hands Siberian barley, sent me from France. I look forward with considerable anxiety to the success of the winter vetch, for it gives us a good winter crop, and helps the succeeding summer one. It is something like doubling the produce of the field. I know it does well in Italy, and therefore have the more hope here. My experience leaves me no fear as to the success of clover. I have never seen finer than in some of my fields which have never been manured. My rotation is triennial; to wit, one year of wheat and two of clover in the stronger fields, or two of peas in the weaker, with a crop of Indian corn and potatoes between every other rotation, that is to say once in seven years. Under this easy course of culture, aided with

some manure, I hope my fields will recover their pristine fertility, which had in some of them been completely exhausted by perpetual crops of Indian corn and wheat alternately. The atmosphere is certainly the great workshop of nature for elaborating the fertilizing principles and insinuating them into the soil. It has been relied on as the sole means of regenerating our soil by most of the land-holders in the canton I inhabit, and where rest has been resorted to before a total exhaustion, the soil has never failed to recover. If, indeed, it be so run down as to be incapable of throwing weeds or herbage of any kind, to shade the soil from the sun, it either goes off in gullies, and is entirely lost, or remains exhausted till a growth springs up of such trees as will rise in the poorest soils. Under the shade of these and the cover soon formed of their deciduous leaves, and a commencing herbage, such fields sometimes recover in a long course of years; but this is too long to be taken into a course of husbandry. Not so however is the term within which the atmosphere alone will reintegrate a soil rested in due season. A year of wheat will be balanced by one, two, or three years of rest and atmospheric influence, according to the quality of the soil. It has been said that no rotation of crops will keep the earth in the same degree of fertility without the aid of manure. But it is well known here that a space of rest greater or less in spontaneous herbage, will restore the exhaustion of a single crop. This then is a rotation; and as it is not to be believed that spontaneous herbage is the only or best covering during rest, so may we expect that a substitute for it may be found which will yield profitable crops. Such perhaps are clover, peas, vetches, &c. A rotation then may be found, which by giving time for the slow influence of the atmosphere, will keep the soil in a constant and equal state of fertility. But the advantage of manuring, is that it will do more in one than the atmosphere would require several years to do, and consequently enables you so much the oftener to take exhausting crops from the soil, a circumstance of importance where there is more labor than land. I am much indebted. - H. A. Washington, ed., The Writings of Thomas Jefferson, 4:223-225 (Washington, D. C., Taylor & Maury, 1854).

JEFFERSON TO SIR JOHN SINCLAIR, FROM WASHINGTON, JUNE 30, 1803

The following letter relates to the experiments of John Binns of Loudoun with gypsum and to the progress of agricultural societies in the early nineteenth century.

Dear Sir,--It is so long since I have had the pleasure of writing to you, that it would be vain to look back to dates to connect the old and the new. Yet I ought not to pass over my acknowledgments to you for various publications received from time to time, and with great satisfaction and thankfulness. I send you a small one in return, the work of a very unlettered farmer, yet valuable, as it relates plain facts of importance to farmers. You will discover that Mr. Binns is an enthusiast for the use of gypsum. But there are two facts which prove he has a right to be so: 1. He began poor, and has made himself tolerably rich by his farming alone. 2. The county of Loudoun, in which he lives, had been so exhausted and wasted by bad husbandry, that it began to depopulate, the inhabitants going Southwardly in quest of better lands. Binns' success has stopped that emigration. It is now becoming one of the most productive counties of the State of Virginia, and the price given for the lands is multiplied manifold....

I hope your agricultural institution goes on with success. I consider you as the author of all the good it shall do. A better idea has never been carried into practice. Our agricultural society has at length formed itself. Like our American Philosophical Society, it is voluntary, and unconnected with the public, and is precisely an execution of the plan I formerly sketched to you. Some State societies have been formed heretofore; the others will do the same. Each State society names two of its members of Congress to be their members in the Central society, which is of course together during the sessions of Congress. They are to select matter from the proceedings of the State societies, and to publish it; so that their publications may be called l'esprit des societies d'agriculture, &c. The Central society was formed the last winter only, so that it will be some time before they get under way. Mr. Madison, the Secretary of State, was elected their President.

Recollecting with great satisfaction our friendly intercourse while I was in Europe, I nourish the hope it still preserves a place in your mind; and with my salutations, I pray you to accept assurances of my constant attachment and high respect. --H. A. Washington, ed., The Writings of Thomas Jefferson, 4:490-492 (Washington, D. C., Taylor & Maury, 1854).

JEFFERSON TO PRESIDENT MADISON, FROM MONTICELLO, MAY 13, 1810

Jefferson was interested in improving American livestock, and the following letter affords an interesting proposal with reference to the early importations of Merino sheep.

Dear Sir,--I thank you for your promised attention to my portion of the Merinos, and if there be any expenses of transportation, &c., and you will be so good as to advance my portion of them with yours and notify the amount, it shall be promptly remitted. What shall we do with them? I have been so disgusted with the scandalous extortions lately practised in the sale of these animals, and with the description of patriotism and praise to the sellers, as if the thousands of dollars apiece they have not been ashamed to receive were not reward enough, that I am disposed to consider as right, whatever is the reverse of what they have done. Since fortune has put the occasion upon us, is it not incumbent upon us so to dispense this benefit to the farmers of our country, as to put to shame those who, forgetting their own wealth and the honest simplicity of the farmers, have thought them fit objects of the shaving art, and to excite, by a better example, the condemnation due to theirs? No sentiment is more acknowledged in the family of Agriculturists than that the few who can afford it should incur the risk and expense of all new improvements, and give the benefit freely to the many of more restricted circumstances. The question then recurs, What are we to do with them? I shall be willing to concur with you in any plan you shall approve, and in order that we may have some proposition to begin upon, I will throw out a first idea, to be modified or postponed to whatever you shall think better.

Give all the full-blooded males we can raise to the different counties of our State, one to each, as fast as we can furnish them. And as there must be some rule of priority for the distribution, let us begin with our own counties, which are contiguous and nearly central to the State, and proceed, circle after circle, till we have given a ram to every county. This will take about seven years, if we add to the full descendants those which will have past to the fourth generation from common ewes, to make the benefit of a single male as general as practicable to the county, we may ask some known character in each county to have a small society formed which shall receive the animal and prescribe rules for his care and government. We should retain ourselves all the full-blooded ewes, that they may enable us the sooner to furnish a male to every county. When all shall have been provided with rams, we may, in a year or two more, be in a condition to give an ewe also to every county, if it be thought necessary. But I suppose

it will not, as four generations from their full-blooded ram will give them the pure race from common ewes.

In the meantime we shall not be without a profit indemnifying our trouble and expense. For if of our present stock of common ewes, we place with the ram as many as he may be competent to, suppose fifty, we may sell the male lambs of every year for such reasonable price as, in addition to the wool, will pay for the maintenance of the flock. The first year they will be half bloods, the second three-quarters, the third seven-eighths, and the fourth full-blooded, if we take care in selling annually half the ewes also, to keep those of highest blood, this will be a fund for kindnesses to our friends, as well as for indemnification to ourselves; and our whole State may thus, from this small stock, so dispersed, be filled in a very few years with this valuable race, and more satisfaction result to ourselves than money ever administered to the bosom of a shaver.... - H. A. Washington, ed., The Writings of Thomas Jefferson, 5:522-524 (Washington, D. C., Taylor & Maury, 1853).

JEFFERSON TO C. W. PEALE, POPLAR FOREST, AUGUST 20, 1811

On retiring from the presidency, Jefferson returned to his beloved Monticello. Occasionally also he sought rest at Poplar Forest. The following letter records his keen delight in being able to take up farming once more.

.... I have heard that you have retired from the city to a farm, and that you give your whole time to that. Does not the museum suffer? And is the farm as interesting? Here, as you know, we are all farmers, but not in a pleasing style. We have so little labor in proportion to our land that, although perhaps we make more profit from the same labor, we cannot give to our grounds that style of beauty which satisfies the eye of the amateur. Our rotations are corn, wheat, and clover, or corn, wheat, clover and clover, or wheat, corn, wheat, clover and clover; preceding the clover by a plastering. But some, instead of clover substitute mere rest, and all are slovenly enough. We are adding the care of Merino sheep. I have often thought that if heaven had given me choice of my position and calling, it should have been on a rich spot of earth, well watered, and near a good market for the productions of the garden. No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden. Such a variety of subjects, some one always coming to

perfection, the failure of one thing repaired by the success of another, and instead of one harvest a continued one through the year. Under a total want of demand except for our family table, I am still devoted to the garden. But though an old man, I am but a young gardener.... -H. A. Washington, ed., The Writings of Thomas Jefferson, 6:6 (Washington, D. C., Taylor & Maury, 1854).

JEFFERSON TO JEAN BATISTE SAY, MONTICELLO, MARCH 2, 1815

The main interest in the following letter is its detailed description of the farming in Jefferson's home community, Albemarle County, Virginia. A statement of Jefferson's attitude toward the growth of manufacturing in the United States as a result of the Napoleonic Wars is also included.

Dear Sir,--Your letter of June 15th came to hand in December, and it is not till the ratification of our peace, that a safe conveyance for an answer could be obtained.... The question proposed in my letter of February 1st, 1804, has since become quite a "question viseuse." I had then persuaded myself that a nation, distant as we are from the contentions of Europe, avoiding all offences to other powers, and not over-hasty in resenting offence from them, doing justice to all; faithfully fulfilling the duties of neutrality, performing all offices of amity, and administering to their interests by the benefits of our commerce, that such a nation, I say, might expect to live in peace, and consider itself merely as a member of the great family of mankind; that in such case it might devote itself to whatever it could best produce, secure of a peaceable exchange of surplus for what could be more advantageously furnished by others, as takes place between one county and another of France. But experience has shown that continued peace depends not merely on our own justice and prudence, but on that of others also; that when forced into war, the interception of exchanges which must be made across a wide ocean, becomes a powerful weapon in the hands of an enemy domineering over that element, and to the other distresses of war adds the want of all those necessities for which we have permitted ourselves to be dependent on others, even arms and clothing. This fact, therefore, solves the question by reducing it to its ultimate form, whether profit or preservation is the first interest of a State? We are consequently become manufacturers to a degree incredible to those who do not see it, and who

only consider the short period of time during which we have been driven to them by the suicidal policy of England. The prohibiting duties we lay on all articles of foreign manufacture which prudence requires us to establish at home, with the patriotic determination of every good citizen to use no foreign article which can be made within ourselves, without regard to difference of price, secures us against a relapse into foreign dependency. And this circumstance may be worthy of your consideration, should you continue in the disposition to emigrate to this country. Your manufactory of cotton, on a moderate scale combined with a farm, might be preferable to either singly, and the one or the other might become principal, as experience should recommend. Cotton ready spun is in ready demand, and if woven, still more so.

I will proceed now to answer the inquiries which respect your views of removal; and I am glad that, in looking over our map, your eye has been attracted by the village of Charlottesville, because I am better acquainted with that than any other portion of the United States, being within three or four miles of the place of my birth and residence. It is a portion of country which certainly possesses great advantages. Its soil is equal in natural fertility to any high lands I have ever seen; it is red and hilly, very like much of the country of Champagne and Burgundy, on the route of Sens, Vermanton, Vitteaux, Dijon, and along the Cote to Chagny, excellently adapted to wheat, maize, and clover; like all mountainous countries it is perfectly healthy, liable to no agues and fevers, or to any particular epidemic, as is evidenced by the robust constitution of its inhabitants, and their numerous families. As many instances of nonagenaires exist habitually in this neighborhood as in the same degree of population anywhere. Its temperature may be considered as a medium of that of the United States.... On an average of seven years I have found our snows amount in the whole to fifteen inches depth, and to cover the ground fifteen days; these, with the rains, give us four feet of water in the year. The garden pea, which we are now sowing, comes to table about the 12th of May; strawberries and cherries about the same time; asparagus the 1st of April. The artichoke stands the winter without cover; lettuce and endive with a slight one of bushes, and often without any; and the fig, protected by a little straw, begins to ripen in July; if unprotected, not till the 1st of September. There is navigation for boats of six tons from Charlottesville to Richmond, the nearest tidewater, and principal market for our produce. The country is what we call well inhabited, there being in our county, Albemarle, of about seven hundred and fifty square miles, about twenty thousand inhabitants, or twenty-seven to a square mile, of whom, however, one half are people of color, either slaves or free. The society is much better than is common in country situations; perhaps there is not a better country society in the United States. But do not imagine this a Parisian or an academical society. It consists of plain, honest,

and rational neighbors, some of them well informed and men of reading, all superintending their farms, hospitable and friendly, and speaking nothing but English. The manners of every nation are the standard of orthodoxy within itself. But these standards being arbitrary, reasonable people in all allow free toleration for the manners, as for the religion of others. Our culture is of wheat for market, and of maize, oats, peas, and clover, for the support of the farm. We reckon it a good distribution to divide a farm into three fields, putting one into wheat, half a one into maize, the other half into oats or peas, and the third into clover, and to tend the fields successively in this rotation. Some woodland in addition, is always necessary to furnish fuel, fences, and timber for constructions. Our best farmers (such as Mr. Randolph, my son-in-law) get from ten to twenty bushels of wheat to the acre; our worst (such as myself) from six to eighteen, with little or more manuring. The bushel of wheat is worth in common times about one dollar. The common produce of maize is from ten to twenty bushels, worth half a dollar the bushel, which is of a cubic foot and a quarter, or, more exactly, of two thousand one hundred and seventy-eight cubic inches. From these data you may judge best for yourself of the size of the farm which would suit your family; bearing in mind, that while you can be furnished by the farm itself for consumption, with every article it is adapted to produce, the sale of your wheat at market is to furnish the fund for all other necessary articles. I will add that both soil and climate are admirably adapted to the vine, which is the abundant natural production of our forests, and that you cannot bring a more valuable laborer than one acquainted with both its culture and manipulation into wine.

Your only inquiry now unanswered is, the price of these lands. To answer this with precision, would require details too long for a letter; the fact being, that we have no metallic measure of values at present, while we are overwhelmed with bank paper. The depreciation of this swells nominal prices, without furnishing any stable index of real value.... You may judge that, in this state of things, the holders of bank notes will give free prices for lands, and that were I to tell you simply the present prices of lands in this medium, it would give you no idea on which you could calculate. But I will state to you the progressive prices which have been paid for particular parcels of land for some years back, which may enable you to distinguish between the real increase of value regularly produced by our advancement in population, wealth, and skill, and the bloated value arising from the present disordered and dropsical state of our medium. There are two tracts of land adjoining me, and another not far off, all of excellent quality, which happen to have been sold at different epochs as follows:

| | |
|---------------------------------|---|
| One was sold in 1793 for \$4 | an acre, in 1812, at \$10, and is now rated \$16. |
| The 2d " 1786 " 5 $\frac{1}{2}$ | " 1803 " 10 " 20. |
| The 3d " 1797 " 7 | " 1811 " 16 " 20. |

On the whole, however, I suppose we may estimate that the steady annual rise of our lands is in a geometrical ratio of 5 per cent.; that were our medium now in a wholesome state, they might be estimated at from twelve to fifteen dollars the acre; and I may add, I believe with correctness, that there is not any part of the Atlantic States where lands of equal quality and advantages can be had as cheap. When sold with a dwelling-house on them, little additional is generally asked for the house. These buildings are generally of wooden materials, and of indifferent structure and accommodation. Most of the hired labor here is people of color, either slaves or free. An able-bodied man has sixty dollars a year, and is clothed and fed by the employer; a woman half that. White laborers may be had, but they are less subordinate, their wages higher, and their nourishment much more expensive. A good horse for the plough costs fifty or sixty dollars. A draught ox twenty to twenty-five dollars. A milch cow fifteen to eighteen dollars. A sheep two dollars. Beef is about five cents, mutton and pork seven cents the pound. A turkey or goose fifty cents apiece, a chicken eight and one-third cents; a dozen eggs the same. Fresh butter twenty to twenty-five cents the pound. And, to render as full as I can the information which may enable you to calculate for yourself, I enclose you a Philadelphia price-current, giving the prices in regular times of most of the articles of produce or manufacture, foreign and domestic.

That it may be for the benefit of your children and their descendants to remove to a country where, for enterprise and talents, so many avenues are open to fortune and fame, I have little doubt. But I should be afraid to affirm that, at your time of life, and with habits formed on the state of society in France, a change for one so entirely different would be for your personal happiness. Fearful therefore to persuade, I shall add with sincere truth, that I shall very highly estimate the addition of such a neighbor to our society, and that there is no service within my power which I shall not render with pleasure and promptitude. With this assurance be pleased to accept that of my great esteem and respect.... -H. A. Washington, ed., The Writings of Thomas Jefferson. 6:430-436 (Washington, D. C., Taylor & Maury, 1854).

JEFFERSON TO TRISTRAM DALTON, FROM MONTICELLO, MAY 2, 1817

Jefferson and his son-in-law, T. M. Randolph, practiced horizontal plowing and bedding as a method of erosion control. The following description is, therefore, of special interest.

A method of ploughing our hillsides horizontally, introduced into this most hilly part of our country by Col. T. M. Randolph, my son in law, may be worth mentioning to you. He has practiced it a dozen or 15 years, and it's advantages were so immediately observed that it has already become very general, and has entirely changed and renovated the face of our country. every rain, before that, while it gave a temporary refreshment, did permanent evil by carrying off our soil and fields were no sooner cleared than washed, at present we may say that we lose none of our soil, the rain not absorbed at the moment of its fall being retained in the hollows between the beds until it can be absorbed. our practice is when we first enter on this process, with a rafter level of 10.f. span, to lay off guide lines conducted horizontally around the hill or valley from one end to the other of the field, and about 30. yards apart. the steps of the level on the ground are marked by a stroke of a hoe, and immediately followed by a plough to preserve the trace. a man or a lad, with a level, and two small boys, the one with sticks, the other with the hoe, will do an acre of this in an hour, and when once done it is forever done. we generally level a field the year it is put into Indian corn, laying it into beds of 6.f. wide with a large water furrow between the beds, until all the fields have been once levelled. the intermediate furrows are run by the eye of the ploughman governed by these guide lines. the inequalities of the declivity in the hill will vary in places the distance of the guide lines and occasion gores which are thrown into short beds. as in ploughing very steep hillsides horizontally a common plough can scarcely throw the furrow up hill, Colo. Randolph has contrived a very simple alteration of the share, which throws the furrow down hill both going and coming. It is as if two shares were welded together at their straight side and at a right angle with each other. this turns on its bar as on a pivot, so as to lay either share horizontal, when the other becoming vertical acts as a mouldboard. this is done by the ploughman in an instant by a single motion of the hand at the end of every furrow...horizontal and deep ploughing with the use of plaster and clover are but beginning to be used here will, as we believe, restore this part of our country to its original fertility, which was exceeded by no upland in the state. - P. L. Ford, ed., The Works of Thomas Jefferson, 12:56-57 (New York, G. P. Putnam's Sons, 1904).

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Lincoln and Agriculture

BIRTHPLACE OF ABRAHAM LINCOLN



INTRODUCTORY NOTE

Lincoln's background was the pioneer farming and rural life which was typical of the outer edge of America's westward-moving frontier. The rude log hut near Hodgenville in central Kentucky where he was born had only a dirt floor, and its roof was made of rough slabs held in place by poles and stones. A small square opening, possibly covered with greased paper, served as a window. At one end of the rough interior was a wide fireplace of stone with a chimney of sticks and clay. The bed in an opposite corner was made of rough slabs placed on poles leading from the walls of the cabin to a crotched stick.

The tract of 300 acres on which the cabin stood could hardly be called a farm. It consisted of poor land covered with tall coarse grass and a few trees. Lincoln's father had bought it in 1808 for \$200. The chief distinguishing feature of the farm is a spring which even today supplies water to those who pay homage at this famous historic spot. It flows from a horizontal cave-like channel of rocks in the low hillside immediately in front of the cabin and then drops abruptly into a perpendicular opening of rock where it disappears; hence, the name Sinking Spring Farm. It was here that the first two years of Lincoln's life were passed.

Lincoln's early boyhood was spent near Knob Creek, about ten miles northeast of his birthplace, on a somewhat more fertile farm of 30 acres. Because of hills and gullies only 14 acres could be tilled. Here he and his sister went to their first school for a brief period. The boy attended, clad only in "a one piece long linsey shirt."

In the fall of 1816 the Lincoln family moved again, this time across the Ohio River and into the heavily wooded wilderness of southern Indiana. Here they established themselves on a knoll surrounded by marshy land, infested with malaria and with no supply of drinking water within a mile. Although his father acquired an option on 160 acres, to be paid for in instalments at \$2.00 per acre, payments on only one-half this amount were ever completed. His father continued to vary his hunting and farming by working at carpentering. In 1824, after the family had been in Indiana seven years, 10 acres of corn, 5 acres of wheat, and 2 acres of oats was the extent of the tilled land on the Lincoln farm. Consequently, the boy was hired out to plow, split rails, grub, make fences, etc. He also worked as a ferryman on the Ohio River; for this work his father received \$6.00 a month. During the hog-packing season, however, he received an additional 31 cents a day.

Early in the spring of 1830, the Lincoln family pushed westward once more, this time to the bluffs along the Sangamon River, in Macon County, Illinois. Soon afterward, having reached his majority, Lincoln left his family and began life for himself.

The facts summarized thus far afford a picture of the early life of the farm-boy Lincoln of a century ago. The farming he knew in his youth was pioneer exploitation rather than settled cultivation, and hardly comparable with the farming of today. His early agricultural environment manifested itself in his stories and in the choice of illustrations used in his speeches.

In 1832, at the age of twenty-three, Lincoln announced his candidacy for the Illinois legislature. In a long address to the people of Sangamon County, he pointed out the need for internal improvements - good roads, navigable streams, and canals. He endorsed railroads, then a new means of transportation, and demanded more careful regulation of banks. He referred to education as the "most important" subject of all. The dexterity with which he handled the issues in this address is early evidence of his native ability as a political strategist. Although defeated in this first attempt to be chosen for public office, he won two years later and served four consecutive terms. Later he had one term in the National House of Representatives (1847-1849). As has been said, "Lincoln's early public career can be best understood as that of an ardent champion, promoter, booster of his section, state and locality." His years as a lawyer riding the court circuit added to his political sagacity and also to his knowledge of the problems of the pioneer farmer. The result was that during the 1850's he "came slowly but surely to represent the frontier, the farmer, and the small town democracy... as few other men ever represented a people" and emerged as a logical and formidable candidate for the presidency. - Everett E. Edwards.

MILWAUKEE ADDRESS ON AGRICULTURE

Lincoln's address before the Wisconsin State Agricultural Society at its annual fair in Milwaukee on September 30, 1859, is the only extended discussion of agriculture he ever made. His emphasis on agricultural fairs as educational and recreational media and his respect for "book learning" are of interest. It is also significant that he singled out the decline in grain yields as the chief of the practical farm problems.

Most important of all, he was cognizant of the potentialities of the revolution which was even then taking place as a result of the introduction of power machinery. Not least in importance are his generalizations concerning agriculture.

Agricultural Fairs are becoming an institution of the country; they are useful in more ways than one; they bring us together, and thereby make us better acquainted, and better friends than we otherwise would be. From the first appearance of man upon the earth, down to very recent times, the words "stranger" and "enemy" were quite or almost synonymous. Long after civilized nations had defined robbery and murder as high crimes, and had affixed severe punishments to them, when practiced among and upon their own people respectively, it was deemed no offence, but even meritorious, to rob, and murder, and enslave strangers, whether as nations or as individuals. Even yet, this has not totally disappeared. The man of the highest moral cultivation, in spite of all which abstract principle can do, likes him whom he does know, much better than him whom he does not know. To correct the evils, great and small, which spring from want of sympathy, and from positive enmity, among strangers, as nations, or as individuals, is one of the highest functions of civilization. To this end our Agricultural Fairs contribute in no small degree. They render more pleasant, and more strong, and more durable, the bond of social and political union among us. Again, if, as Pope declares, "happiness is our being's end and aim," our Fairs contribute much to that end and aim, as occasions of recreation--as holidays. Constituted as man is, he has positive need of occasional recreation; and whatever can give him this, associated with virtue and advantage, and free from vice and disadvantage, is a positive good. Such recreation our Fairs afford. They are a present pleasure, to be followed by no pain, as a consequence; they are a present pleasure, making the future more pleasant.

But the chief use of Agricultural Fairs is to aid in improving the great calling of Agriculture, in all its departments, and minute divisions; to make mutual exchange of agricultural discovery, information and knowledge; so that, at the end, all may know everything, which may have been known to but one, or to but few, at the beginning; to bring together, especially, all which is supposed to not be generally known, because of recent discovery or invention.

And not only to bring together, and to impart all which has been accidentally discovered or invented upon ordinary motive; but, by exciting emulation, for premiums, and for the pride and honor of success--of triumph, in some sort--to stimulate that discovery and invention into extraordinary activity. In this, these Fairs are kindred to the patent clause in the Constitution of the United States; and to the department, and practical system, based upon that clause.

One feature, I believe, of every Fair, is a regular Address. The Agricultural Society of the young, prosperous, and soon to be, great State of Wisconsin, has done me the high honor of selecting me to make that address upon this occasion--an honor for which I make my profound and grateful acknowledgement.

I presume I am not expected to employ the time assigned me in the mere flattery of the farmers, as a class. My opinion of them is that, in proportion to numbers, they are neither better nor worse than other people. In the nature of things they are more numerous than any other class; and I believe there really are more attempts at flattering them than any other; the reason of which I cannot perceive, unless it be that they can cast more votes than any other. On reflection, I am not quite sure that there is not cause of suspicion against you, in selecting me, in some sort a politician, and in no sort a farmer, to address you.

But farmers, being the most numerous class, it follows that their interest is the largest interest. It also follows that that interest is most worthy of all to be cherished and cultivated--that if there be inevitable conflict between that interest and any other, that other should yield.

Again, I suppose it is not expected of me to impart to you much specific information on Agriculture. You have no reason to believe, and do not believe, that I possess it--if that were what you seek in this address, any one of your own number, or class, would be more able to furnish it.

You, perhaps, do expect me to give some general interest to the occasion; and to make some general suggestions, on practical matters.

I shall attempt nothing more. And in such suggestions by me, quite likely very little will be new to you, and a large part of the rest possibly already known to be erroneous.

My first suggestion is an inquiry as to the effect of greater thoroughness in all the departments of Agriculture than now prevails in the North-West--perhaps I might say in America. To speak entirely within bounds, it is known that fifty bushels of wheat, or one hundred bushels of Indian corn can be produced from an acre. Less than a year ago I saw it stated that a man, by extraordinary care and labor, had produced of wheat what was equal to two hundred bushels from an acre. But take fifty of wheat, and one hundred of corn, to be the possibility, and compare it with the actual crops of the country.--Many years ago I saw it stated in a Patent Office Report that eighteen bushels was the average crop throughout the United States; and this year an intelligent farmer of Illinois, assured me that he did not believe the land harvested in that State this season, had yielded more than an average of eight bushels to the acre; much was cut, and then abandoned as not worth threshing; and much was abandoned as not worth cutting. As to Indian corn, and indeed, most other crops, the case has not been much better. For the last four years I do not believe the ground planted with corn in Illinois, has produced an average of twenty bushels to the acre. It is true, that heretofore we have had better crops, with no better cultivation; but I believe it is also true that the soil has never been pushed up to one-half of its capacity.

What would be the effect upon the farming interest, to push the soil up to something near its full capacity? Unquestionably it will take more labor to produce fifty bushels from an acre, than it will to produce ten bushels, from the same acre. But it will take more labor to produce fifty bushels from one acre, than from five? Unquestionably, thorough cultivation will require more labor to the acre; but will it require more to the bushel? If it should require just as much to the bushel, there are some probable, and several certain advantages in favor of the thorough practice. It is probable it would develop those unknown causes, which of late years have cut down our crops below their former average. It is almost certain, I think, that in the deeper plowing, analysis of the soils, experiments with manures, and varieties of seeds, observance of seasons, and the like, these cases would be found. It is certain that thorough cultivation would spare half, or more than half the cost of land, simply because the same product would be got from half, or from less than half the quantity of land. This proposition is self-evident, and can be made no plainer by repetitions or illustrations. The cost of land is a great item, even in new countries; and constantly grows greater and greater, in comparison with other items, as the country grows older.

It also would spare the making and maintaining of inclosures--the same, whether these inclosures should be hedges, ditches or fences. This again, is a heavy item--heavy at first, and heavy in its continual demand for repairs. I remember once being greatly astonished by an apparently authentic exhibition of the proportion the cost of an inclosure bears to all the other expenses of the farmer; though I cannot remember exactly what that proportion was. Any farmer, if he will, can ascertain it in his own case, for himself.

Again, a great amount of "locomotion" is spared by thorough cultivation. Take fifty bushels of wheat, ready for the harvest, standing upon a single acre, and it can be harvested in any of the known ways, with less than half the labor which would be required if it were spread over five acres. This would be true, if cut by the old hand sickle; true, to a greater extent, if by the scythe and cradle; and to a still greater extent, if by the machines now in use. These machines are chiefly valuable, as a means of substituting animal power for the power of men in this branch of farm work. In the highest degree of perfection yet reached in applying the horse power to harvesting, fully nine-tenths of the power is expended by the animal in carrying himself and dragging the machine over the field, leaving certainly not more than one-tenth to be applied directly to the only end of the whole operation--the gathering in of the grain, and clipping of the straw. When grain is very thin on the ground, it is always more or less intermingled with weeds, chess and the like, and a large part of the power is expended in cutting these. It is plain that when the crop is very thick upon the ground, a larger proportion of the power is directly applied to gathering in and cutting it; and the smaller, to that which is totally useless as an end. And what I have said of harvesting is true, in a greater or less degree of mowing, plowing, gathering in of crops generally, and, indeed, of almost all farm work.

The effect of thorough cultivation upon the farmer's own mind, and, in reaction through his mind, back upon his business, is perhaps quite equal to any other of its effects. Every man is proud of what he does well; and no man is proud of that he does not well. With the former, his heart is in his work; and he will do twice as much of it with less fatigue. The latter performs a little imperfectly, looks at it in disgust, turns from it, and imagines himself exceedingly tired. The little he has done, comes to nothing, for want of finishing.

The man who produces a good full crop will scarcely ever let any part of it go to waste. He will keep up the enclosure about it, and allow neither man nor beast to trespass upon it. He will gather it in due season and store it in perfect security. Thus he labors with satisfaction, and saves himself the whole fruit of his labor. The

other, starting with no purpose for a full crop, labors less, and with less satisfaction; allows his fence to fall, and cattle to trespass; gathers not in due season, or not all. Thus the labor he has performed, is wasted away, little by little, till in the end, he derives scarcely anything from it.

The ambition for broad acres leads to poor farming, even with men of energy. I scarcely ever knew a mammoth farm to sustain itself; much less to return a profit upon the outlay. I have more than once known a man to spend a respectable fortune upon one; fail and leave it; and then some man of modest aims, get a small fraction of the ground, and make a good living upon it. Mammoth farms are like tools or weapons, which are too heavy to be handled. Ere long they are thrown aside at a great loss.

The successful application of steam power to farm work, is a desideratum--especially a steam plow. It is not enough that a machine operated by steam, will really plow. To be successful, it must, all things considered, plow better than can be done with animal power. It must do all the work as well, and cheaper; or more rapidly, so as to get through more perfectly in season; or in some way afford an advantage over plowing with animals, else it is no success. I have never seen a machine intended for a steam plow. Much praise and admiration are bestowed upon some of them; and they may be, for aught I know, already successful; but I have not perceived the demonstration of it. I have thought a good deal, in an abstract way about a steam plow. That one which shall be so contrived as to apply the larger proportion of its power to the cutting and turning the soil, and the smallest, to the moving itself over the field, will be the best one. A very small stationary engine would draw a large gang of plows through the ground from a short distance to itself; but when it is not stationary, but has to move along like a horse, dragging the plows after it; it must have additional power to carry itself; and the difficulty grows by what is intended to overcome it; for what adds power also adds size, and weight to the machine, thus increasing again, the demand for power. Suppose you should construct the machine so as to cut a succession of short furrows, say a rod in length, transversely to the course the machine is locomoting, something like the shuttle in weaving. In such case the whole machine would move north only the width of a furrow, while in length the furrow would be a rod from east to west. In such case, a very large proportion of the power, would be applied to the actual plowing. But in this, too, there would be difficulty, which would be the getting of the plow into, and out of, the ground, at the end of all these short furrows.

I believe, however, ingenious men will, if they have not already, overcome the difficulty I have suggested. But there is still another,

about which I am less sanguine. It is the supply of fuel, and especially water, to make steam. Such supply is clearly practicable, but can the expense of it be borne? Steamboats live upon the water, and find their fuel at stated places. Steam mills, and other stationary steam machinery, have their stationary supplies of fuel and water. Railroad locomotives have their regular wood and water stations. But the steam plow is less fortunate. It does not live upon the water; and if it be once at a water station, it will work away from it, and when it gets away cannot return, without leaving its work, at a great expense of its time and strength. It will occur that a wagon and horse team might be employed to supply it with fuel and water; but this, too, is expensive; and the question recurs, "can the expense be borne?" When this is added to all other expenses, will not plowing cost more than in the old way?

It is to be hoped that the steam plow will be finally successful, and if it shall be, "thorough cultivation"--putting the soil to the top of its capacity--producing the largest crop possible from a given quantity of ground--will be most favorable for it. Doing a large amount of work upon a small quantity of ground it will be, as nearly as possible, stationary while working, and as free as possible from locomotion; thus expending its strength as much as possible upon its work, and as little as possible in traveling. Our thanks, and something more substantial than thanks, are due to every man engaged in the effort to produce a successful steam plow. Even the unsuccessful will bring something to light which in the hands of others will contribute to the final success. I have not pointed out difficulties, in order to discourage, but in order that, being seen, they may be the more readily overcome.

The world is agreed that labor is the source from which human wants are mainly supplied. There is no dispute upon this point. From this point, however, men immediately diverge. Much disputation is maintained as to the best way of applying and controlling the labor element. By some it is assumed that labor is available only in connection with capital--that nobody labors, unless somebody else owning capital, somehow, by the use of it, induces him to do it. Having assumed this, they proceed to consider whether it is best that capital shall hire laborers, and thus induce them to work by their own consent, or buy them, and drive them to it, without their consent. Having proceeded so far, they naturally conclude that all laborers are naturally either hired laborers or slaves. They further assume that whoever is once a hired laborer, is fatally fixed in that condition for life; and thence again, that his condition is as bad as, or worse, than that of a slave. This is the "mud-sill" theory. But another class of reasoners hold the opinion that there is no such relation between capital and labor, as assumed; and that there is no such thing

as a freeman being fatally fixed for life, in the condition of a hired laborer, that both these assumptions are false, and all inferences from them groundless. They hold that labor is prior to, and independent of, capital; that, in fact, capital is the fruit of labor, and could never have existed if labor had not first existed--that labor can exist without capital, but that capital could never have existed without labor. Hence they hold that labor is the superior--greatly the superior of capital.

They do not deny that there is, and probably always will be, a relation between labor and capital. The error, as they hold, is in assuming that the whole labor of the world exists within that relation. A few men own capital; and that few avoid labor themselves, and with their capital, hire or buy another few to labor for them. A large majority belong to neither class--neither work for others, nor have others working for them.--Even in all our slave States, except South Carolina, a majority of the whole people of all colors, are neither slaves nor masters. In these free States, a large majority are neither hirers nor hired. Men, with their families--wives, sons, and daughters--work for themselves, on their farms, in their houses and in their shops, taking the whole product to themselves, and asking no favors of capital on the one hand, nor of hirelings or slaves on the other. It is not forgotten that a considerable number of persons mingle their own labor with capital; that is, labor with their own hands, and also buy slaves or hire freemen to labor for them; but this is only a mixed, and not a distinct class. No principle stated is disturbed by the existence of this mixed class. Again, as has already been said, the opponents of the "mud-sill" theory insist that there is not, of necessity, any such thing as the free hired laborer being fixed to that condition for life. There is demonstration for saying this. Many independent men, in this assembly, doubtless a few years ago were hired laborers. And their case is almost if not quite the general rule.

The prudent, penniless beginner in the world, labors for wages awhile, saves a surplus with which to buy tools or land, for himself; then labors on his own account another while, and at length hires another new beginner to help him. This say its advocates, is free labor--the just and generous, and prosperous system, which opens the way for all--gives hope to all, and energy, and progress, and improvement of condition to all. If any continue through life in the condition of the hired laborer, it is not the fault of the system, but because of either a dependent nature which prefers it, or improvidence, folly, or singular misfortune. I have said this much about the elements of labor generally; as introductory to the consideration of a new phase which that element is in process of assuming. The old general rule was that educated people did not perform manual labor. They managed

to eat their bread, leaving the toil of producing it to the uneducated. This was not an insupportable evil to the working bees, so long as the class of drones remained very small. But now, especially in these free States, nearly all are educated--quite too nearly all, to leave the labor of the uneducated, in any wise adequate to the support of the whole. It follows from this that henceforth educated people must labor. Otherwise, education itself would become a positive and intolerable evil. No country can sustain, in idleness, more than a small per centage of its numbers. The great majority must labor at something productive. From these premises the problem springs--"How can labor and education be the most satisfactorily combined?"

By the "mud-sill" theory it is assumed that labor and education are incompatible; and any practical combination of them impossible. According to that theory, a blind horse upon a tread mill, is a perfect illustration of what a laborer should be--all the better for being blind, that he could not kick understandingly. According to that theory, the education of laborers, is not only useless, but pernicious and dangerous. In fact, it is, in some sort, deemed a misfortune that laborers should have heads at all. Those same heads are regarded as explosive materials, only to be safely kept in damp places, as far as possible from that peculiar sort of fire which ignites them. A Yankee who could invent a strong handed man without a head would receive the everlasting gratitude of the "mud-sill" advocates.

But free labor says "no!" Free labor argues, that as the Author of man makes every individual with one head and one pair of hands, it was probably intended that heads and hands should co-operate as friends; and that that particular head, should direct and control that pair of hands. As each man has one mouth to be fed, and one pair of hands to furnish food, it was probably intended that that particular pair of hands should feed that particular mouth--that each head is the natural guardian, director and protector of the hands and mouth inseparably connected with it; and that being so, every head should be cultivated, and improved, by whatever will add to its capacity for performing its charge. In one word free labor insists on universal education.

I have so far stated the opposite theories of "mud-sill" and "free labor" without declaring any preference of my own between them. On an occasion like this I ought not to declare any. I suppose, however, I shall not be mistaken, in assuming as a fact, that the people of Wisconsin prefer free labor, with its natural companion, education.

This leads to the further reflection, that no other human occupation opens so wide a field for the profitable and agreeable combination of labor with cultivated thought, as agriculture. I know nothing

so pleasant to the mind, as the discovery of anything that is at once new and valuable--nothing that so lightens and sweetens toil, as the hopeful pursuit of such discovery. And how vast, and how varied a field is agriculture, for such discovery. The mind, already trained to thought, in the country school, or higher school, cannot fail to find there an exhaustless source of enjoyment. Every blade of grass is a study; and to produce two, where there was but one, is both a profit and a pleasure. And not grass alone; but soils, seeds, and seasons--hedges, ditches, and fences, draining, droughts, and irrigation--plowing, hoeing, and harrowing--reaping, mowing, and threshing--saving crops, pests of crops, diseases of crops, and what will prevent or cure them--implements, utensils, and machines, their relative merits, and to improve them--hogs, horses, and cattle--sheep, goats, and poultry--trees, shrubs, fruits, plants, and flowers--the thousand things of which these are specimens--each a world of study within itself.

In all this, book-learning is available. A capacity, and taste, for reading, gives access to whatever has already been discovered by others. It is the key, or one of the keys, to the already solved problems. And not only so. It gives a relish and facility for successfully pursuing the unsolved ones. The rudiments of science, are available, and highly valuable. Some knowledge of botany assists in dealing with the vegetable world--with all growing crops. Chemistry assists in the analysis of soils, selection, and application of manures, and in numerous other ways. The mechanical branches of natural philosophy, are ready help in almost everything; but especially in reference to implements and machinery.

The thought recurs that education--cultivated thought--can best be combined with agricultural labor, or any labor, on the principle of thorough work--that careless, half-performed, slovenly work, makes no place for such combination. And thorough work, again renders sufficient, the smallest quantity of ground to each man. And this again, conforms to what must occur in a world less inclined to wars, and more devoted to the arts of peace than heretofore. Population must increase rapidly--more rapidly than in former times--and ere long the most valuable of all arts, will be the art of deriving a comfortable subsistence from the smallest area of soil. No community whose every member possesses this art, can ever be the victim of oppression in any of its forms. Such community will be alike independent of crowned-kings, money-kings, and land-kings.

But, according to your programme, the awarding of premiums awaits the closing of this address. Considering the deep interest necessarily pertaining to that performance, it would be no wonder if I am already heard with some impatience. I will detain you but a moment longer, Some of you will be successful, and such will need but little philos-

ophy to take them home in cheerful spirits; others will be disappointed, and will be in a less happy mood. To such, let it be said, "Lay it not too much to heart." Let them adopt the maxim, "Better luck next time;" and then, by renewed exertion, make that better luck for themselves.

And by the successful, and unsuccessful, let it be remembered, that while occasions like the present, bring their sober and durable benefits, the exultations and mortifications of them are but temporary; that the victor will soon be vanquished, if he relax in his exertion; and that the vanquished this year, may be victor the next, in spite of all competition.

It is said an Eastern monarch once charged his wise men to invent him a sentence, to be ever in view, and which should be true and appropriate in all times and situations. They presented him the words, "And this, too, shall pass away." How much it expresses! How chastening in the hour of pride! How consoling in the depths of affliction! "And this, too, shall pass away." And yet, let us hope, it is not quite true. Let us hope, rather, that by the best cultivation of the physical world, beneath and around us, and the intellectual and moral world within us, we shall secure an individual, social, and political prosperity and happiness, whose course shall be onward and upward, and which, while the earth endures, shall not pass away. - Wisconsin State Agricultural Society, Transactions (1858-59), 5:287-299 (Madison, 1860).

FIRST ANNUAL MESSAGE TO CONGRESS, DECEMBER 3, 1861

Lincoln, in his first annual message to Congress on December 3, 1861, added his Presidential influence to the movement for the creation of the Department of Agriculture in the following words:

Agriculture, confessedly the largest interest of the nation, has not a department nor a bureau, but a clerkship only, assigned to it in the Government. While it is fortunate that this great interest is so independent in its nature as to not have demanded and extorted more from the Government, I respectfully ask Congress to consider whether something more can not be given voluntarily with general advantage.

Annual reports exhibiting the condition of our agriculture, commerce, and manufactures would present a fund of information of great practical value to the country. While I make no suggestions as to details, I venture the opinion that an agricultural and statistical bureau might profitably be organized. -J. D. Richardson, ed., A Compilation of the Messages and Papers of the Presidents, 6:52-53 (Washington, Govt. Print. Off., 1897).

SECOND ANNUAL MESSAGE TO CONGRESS, DECEMBER 1, 1862

In his second annual message on December 1, 1862,
Lincoln reported to Congress as follows:

To carry out the provisions of the act of Congress of the 15th of May last, I have caused the Department of Agriculture of the United States to be organized.

The Commissioner informs me that within the period of a few months this Department has established an extensive system of correspondence and exchanges, both at home and abroad, which promises to effect highly beneficial results in the development of a correct knowledge of recent improvements in agriculture, in the introduction of new products, and in the collection of the agricultural statistics of the different States.

Also, that it will soon be prepared to distribute largely seeds, cereals, plants, and cuttings, and has already published and liberally diffused much valuable information in anticipation of a more elaborate report, which will in due time be furnished, embracing some valuable tests in chemical science now in progress in the laboratory.

The creation of this Department was for the more immediate benefit of a large class of our most valuable citizens, and I trust that the liberal basis upon which it has been organized will not only meet your approbation, but that it will realize at no distant day all the fondest anticipations of its most sanguine friends and become the fruitful source of advantage to all our people. - J. D. Richardson, ed., A Compilation of the Messages and Papers of the Presidents, 6:133 (Washington, Govt. Print. Off., 1897).

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Agricultural Laws of 1862

AGRICULTURAL LAWS OF 1862

During the second year of Lincoln's presidency three bills of vast significance to agriculture were passed by Congress. They were the act establishing the Department of Agriculture, the Homestead Act, and the Land Grant College Act. Although these laws were the culmination of movements extending over considerable time, it remained for Lincoln to sign them and make them operative.

ACT ESTABLISHING THE DEPARTMENT OF AGRICULTURE

On May 15, 1862, Lincoln signed the act that established the Department of Agriculture with a Commissioner at its head. The Department was made an executive office of the first rank under an act approved by President Cleveland on February 9, 1889. By this act the title of the head of the Department was changed from Commissioner to Secretary, and he was made a member of the President's Cabinet. The full text of the act of 1862 is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby established at the seat of the Government of the United States a Department of Agriculture, the general designs and duties of which shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants.

Sec. 2. And be it further enacted, That there shall be appointed by the President, by and with the advice and consent of the Senate, a "Commissioner of Agriculture," who shall be the chief executive officer of the Department of Agriculture, who shall hold his office by a tenure similar to that of other civil officers ap-

pointed by the President, and who shall receive for his compensation a salary of three thousand dollars per annum.

Sec. 3. And be it further enacted, That it shall be the duty of the Commissioner of Agriculture to acquire and preserve in his Department all information concerning agriculture which he can obtain by means of books and correspondence, and by practical and scientific experiments, (accurate records of which experiments shall be kept in his office,) by the collection of statistics, and by any other appropriate means within his power; to collect, as he may be able, new and valuable seeds and plants; to test, by cultivation, the value of such of them as may require such tests; to propagate such as may be worthy of propagation, and to distribute them among agriculturists. He shall annually make a general report in writing of his acts to the President and to Congress, in which he may recommend the publication of papers forming parts of or accompanying his report, which report shall also contain an account of all moneys received and expended by him. He shall also make special reports on particular subjects whenever required to do so by the President or either House of Congress, or when he shall think the subject in his charge requires it. He shall receive and have charge of all the property of the agricultural division of the Patent Office in the Department of the Interior, including the fixtures and property of the propagating garden. He shall direct and superintend the expenditure of all money appropriated by Congress to the Department, and render accounts thereof, and also of all money heretofore appropriated for agriculture and remaining unexpended. And said Commissioner may send and receive through the mails, free of charge, all communications and other matter pertaining to the business of his Department, not exceeding in weight thirty-two ounces.

Sec. 4. And be it further enacted, That the Commissioner of Agriculture shall appoint a chief clerk, with a salary of two thousand dollars, who in all cases during the necessary absence of the Commissioner, or when the said principal office shall become vacant, shall perform the duties of Commissioner, and he shall appoint such other employés as Congress may from time to time provide, with salaries corresponding to the salaries of similar officers in other Departments of the Government; and he shall, as Congress may from time to time provide, employ other persons, for such time as their services may be needed, including chemists, botanists, entomologists, and other persons skilled in the natural sciences pertaining to agriculture. And the said Commissioner, and every other person to be appointed in the said Department, shall, before he enters upon the duties of his office or appointment, make oath or affirmation truly and faithfully to execute the trust committed to him. And the said Commissioner and the chief clerk shall also, before entering upon their duties, severally give bonds to the Treasurer of the United States, the former in the

sum of of ten thousand dollars, and the latter in the sum of five thousand dollars, conditional to render a true and faithful account to him or his successor in office, quarter yearly accounts of all moneys which shall be by them received by virtue of the said office, with sureties to be approved as sufficient by the Solicitor of the Treasury; which bonds shall be filed in the office of the First Comptroller of the Treasury, to be by him put in suit upon any breach of the conditions thereof.

Approved, May 15, 1862. - Statutes at Large, 12:387-388.

HOMESTEAD ACT OF 1862

On May 20, 1862, Lincoln signed the Homestead Act. During the course of its operation, approximately 234,000,000 acres of the public domain have been transferred to private ownership. Its exact title is "An Act to secure Homesteads to actual Settlers in the Public Domain," and its text is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any person who is the head of a family, or who has arrived at the age of twenty-one years, and is a citizen of the United States, or who shall have filed his declaration of intention to become such, as required by the naturalization laws of the United States, and who has never borne arms against the United States Government or given aid and comfort to its enemies, shall, from and after the first January, eighteen hundred and sixty-three, be entitled to enter one quarter section or a less quantity of unappropriated public lands, upon which said person may have filed a preemption claim, or which may, at the time the application is made, be subject to preemption at one dollar and twenty-five cents, or less, per acre; or eighty acres or less of such unappropriated lands, at two dollars and fifty cents per acre, to be located in a body, in conformity to the legal subdivisions of the public lands, and after the same shall have been surveyed: Provided, That any person owning and residing on land may, under the provisions of this act, enter other land lying contiguous to his or her said land, which shall not, with the land so already owned and occupied, exceed in the aggregate one hundred and sixty acres.

Sec. 2. And be it further enacted, That the person applying for the benefit of this act shall, upon application to the register of the

land office in which he or she is about to make such entry, make affidavit before the said register or receiver that he or she is the head of a family, or is twenty-one years or more of age, or shall have performed service in the army or navy of the United States, and that he has never borne arms against the Government of the United States or given aid and comfort to its enemies, and that such application is made for his or her exclusive use and benefit, and that said entry is made for the purpose of actual settlement and cultivation, and not either directly or indirectly for the use or benefit of any other person or persons whomsoever; and upon filing the said affidavit with the register or receiver, and on payment of ten dollars, he or she shall thereupon be permitted to enter the quantity of land specified: Provided, however, That no certificate shall be given or patent issued therefor until the expiration of five years from the date of such entry; and if, at the expiration of such time, or at any time within two years thereafter, the person making such entry; or, if he be dead, his widow; or in case of her death, his heirs or devisee; or in case of a widow making such entry, her heirs or devisee, in case of her death; shall prove by two credible witnesses that he, she, or they have resided upon or cultivated the same for the term of five years immediately succeeding the time of filing the affidavit aforesaid, and shall make affidavit that no part of said land has been alienated, and that he has borne true allegiance to the Government of the United States; then, in such case, he, she, or they, if at that time a citizen of the United States, shall be entitled to a patent, as in other cases provided for by law: And provided, further, That in case of the death of both father and mother, leaving an infant child, or children, under twenty-one years of age, the right and fee shall enure to the benefit of said infant child or children; and the executor, administrator, or guardian may, at any time within two years after the death of the surviving parent, and in accordance with the laws of the State in which such children for the time being have their domicil, sell said land for the benefit of said infants, but for no other purpose; and the purchaser shall acquire the absolute title by the purchase, and be entitled to a patent from the United States, on payment of the office fees and sum of money herein specified.

Sec. 3. And be it further enacted, That the register of the land office shall note all such applications on the tract books and plats of his office, and keep a register of all such entries, and make return thereof to the General Land Office, together with the proof upon which they have been founded.

Sec. 4. And be it further enacted, That no lands acquired under the provisions of this act shall in any event become liable to the satisfaction of any debt or debts contracted prior to the issuing of the patent therefor.

Sec. 5. And be it further enacted, That if, at any time after the filing of the affidavit, as required in the second section of this act, and before the expiration of the five years aforesaid, it shall be proven, after due notice to the settler, to the satisfaction of the register of the land office, that the person having filed such affidavit shall have actually changed his or her residence, or abandoned the said land for more than six months at any time, then and in that event the land so entered shall revert to the government.

Sec. 6. And be it further enacted, That no individual shall be permitted to acquire title to more than one quarter section under the provisions of this act; and that the Commissioner of the General Land Office is hereby required to prepare and issue such rules and regulations, consistent with this act, as shall be necessary and proper to carry its provisions into effect; and that the registers and receivers of the several land offices shall be entitled to receive the same compensation for any lands entered under the provisions of this act that they are now entitled to receive when the same quantity of land is entered with money, one half to be paid by the person making the application at the time of so doing, and the other half on the issue of the certificate by the person to whom it may be issued; but this shall not be construed to enlarge the maximum of compensation now prescribed by law for any register or receiver: Provided, That nothing contained in this act shall be so construed as to impair or interfere in any manner whatever with existing preemption rights: And provided, further, That all persons who may have filed their applications for a preemption right prior to the passage of this act, shall be entitled to all privileges of this act: Provided, further, That no person who has served, or may hereafter serve, for a period of not less than fourteen days in the army or navy of the United States, either regular or volunteer, under the laws thereof, during the existence of an actual war, domestic or foreign, shall be deprived of the benefits of this act on account of not having attained the age of twenty-one years.

Sec. 7. And be it further enacted, That the fifth section of the act entitled "An act in addition to an act more effectually to provide for the punishment of certain crimes against the United States, and for other purposes," approved the third of March, in the year eighteen hundred and fifty-seven, shall extend to all oaths, affirmations, and affidavits, required or authorized by this act.

Sec. 8. And be it further enacted, That nothing in this act shall be so construed as to prevent any person who has availed him or herself of the benefits of the first section of this act, from paying the minimum price, or the price to which the same may have graduated, for the quantity of land so entered at any time before the expiration

of the five years, and obtaining a patent therefor from the government, as in other cases provided by law, on making proof of settlement and cultivation as provided by existing laws granting preemption rights.

Approved, May 20, 1862. - Statutes at Large, 12:392-393.

LAND GRANT COLLEGE ACT OF 1862

On July 2, 1862, Lincoln signed the Land Grant College Act. It appropriated large areas of land from the public domain for the endowment of the agricultural colleges that have become so important to American agriculture and the educational system of today.

Its exact title is "An Act donating Public Lands to the several States and Territories which may provide Colleges for the Benefit of Agriculture and the Mechanic Arts," and its text is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there be granted to the several States, for the purposes hereinafter mentioned, an amount of public land, to be apportioned to each State a quantity equal to thirty thousand acres for each senator and representative in Congress to which the States are respectively entitled by the apportionment under the census of eighteen hundred and sixty: Provided, That no mineral lands shall be selected or purchased under the provisions of this act.

Sec. 2. And be it further enacted, That the land aforesaid, after being surveyed, shall be apportioned to the several States in sections or subdivisions of sections, not less than one quarter of a section; and whenever there are public lands in a State subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said State shall be entitled shall be selected from such lands within the limits of such State, and the Secretary of the Interior is hereby directed to issue to each of the States in which there is not the quantity of public lands subject to sale at private entry at one dollar and twenty-five cents per acre, to which said State may be entitled under the provisions of this act, land scrip to the amount in acres for the deficiency of its distributive share: said scrip to be sold by said States and the proceeds thereof applied to

the uses and purposes prescribed in this act, and for no other use or purpose whatsoever: Provided, That in no case shall any State to which land scrip may thus be issued be allowed to locate the same within the limits of any other State, or of any Territory of the United States, but their assignees may thus locate said land scrip upon any of the unappropriated lands of the United States subject to sale at private entry at one dollar and twenty-five cents, or less, per acre: And provided, further, That not more than one million acres shall be located by such assignees in any one of the States: And provided, further, That no such location shall be made before one year from the passage of this act.

Sec. 3. And be it further enacted, That all the expenses of management, superintendence, and taxes from the date of selection of said lands, previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the States to which they may belong, out of the treasury of said States, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purposes hereinafter mentioned.

Sec. 4. And be it further enacted, That all moneys derived from the sale of the lands aforesaid by the States to which the lands are apportioned, and from the sales of land scrip hereinbefore provided for, shall be invested in stocks of the United States, or of the States, or some other safe stocks, yielding not less than five per centum upon the par value of said stocks; and that the moneys so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished, (except so far as may be provided in section fifth of this act,) and the interest of which shall be inviolably appropriated, by each State which may take and claim the benefit of this act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.

Sec. 5. And be it further enacted, That the grant of land and land scrip hereby authorized shall be made on the following conditions, to which, as well as to the provisions hereinbefore contained, the previous assent of the several States shall be signified by legislative acts:

First. If any portion of the fund invested, as provided by the foregoing section, or any portion of the interest thereon, shall, by

any action or contingency, be diminished or lost, it shall be replaced by the State to which it belongs, so that the capital of the fund shall remain forever undiminished; and the annual interest shall be regularly applied without diminution to the purposes mentioned in the fourth section of this act, except that a sum, not exceeding ten per centum upon the amount received by any State under the provisions of this act, may be expended for the purchase of lands for sites or experimental farms, whenever authorized by the respective legislatures of said States.

Second. No portion of said fund, nor the interest thereon, shall be applied, directly or indirectly, under any pretence whatever, to the purchase, erection, preservation, or repair of any building or buildings.

Third. Any State which may take and claim the benefit of the provisions of this act shall provide, within five years, at least not less than one college, as described in the fourth section of this act, or the grant to such State shall cease; and said State shall be bound to pay the United States the amount received of any lands previously sold, and that the title to purchasers under the State shall be valid.

Fourth. An annual report shall be made regarding the progress of each college, recording any improvements and experiments made, with their cost and results, and such other matters, including State industrial and economical statistics, as may be supposed useful; one copy of which shall be transmitted by mail free, by each, to all the other colleges which may be endowed under the provisions of this act, and also one copy to the Secretary of the Interior.

Fifth. When lands shall be selected from those which have been raised to double the minimum price, in consequence of railroad grants, they shall be computed to the States at the maximum price, and the number of acres proportionally diminished.

Sixth. No State while in a condition of rebellion or insurrection against the government of the United States shall be entitled to the benefit of this act.

Seventh. No State shall be entitled to the benefits of this act unless it shall express its acceptance thereof by its legislature within two years from the date of its approval by the President.

Sec. 6. And be it further enacted, That land scrip issued under the provisions of this act shall not be subject to location until after the first day of January, one thousand eight hundred and sixty-three.

Sec. 7. And be it further enacted, That the land officers shall receive the same fees for locating land scrip issued under the provisions of this act as is now allowed for the location of military bounty land warrants under existing laws; Provided, their maximum compensation shall not be thereby increased.

Sec. 8. And be it further enacted, That the Governors of the several States to which scrip shall be issued under this act shall be required to report annually to Congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

Approved, July 2, 1862. - Statutes at Large, 12:503-505.

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